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NUCLEAR REGULATORY COMMISSION'S BUDGET REQUEST FOR FISCAL YEARS 1984 AND 1985

HEARING

BEFORE THE

SUBCOMMITTEE ON NUCLEAR REGULATION

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

NINETY-EIGHTH CONGRESS

FIRST SESSION

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CONTENTS

Page

Simpson, Hon. Alan K., U.S. Senator from the State of Wyoming, opening statement of 1

WITNESSES

Palladino, Nunzio J., Chairman, Nuclear Regulatory Commission, accompanied by Victor Gilinsky, Commissioner; John Ahearne, Commissioner; Thomas Roberts, Commissioner; James Asselstine, Commissioner; William J. Dircks, Executive Director for Operations; Harold R. Denton, Director, Office of Nuclear Reactor Regulation; Victor Stello, Jr., Director, Office of Inspection and Enforcement; John G. Davis, Director, Office of Nuclear Material Safety and Safeguards; Robert B. Minogue, Director, Office of Nuclear Regulatory Research; Robert Bernero; and Richard DeYoung 2

ADDITIONAL MATERIAL

Responses to written questions:

- Questions submitted prior to the hearing 34
- Questions submitted after the hearing 140
- Questions from Senator Biden 483

NUCLEAR REGULATORY COMMISSION'S BUDGET REQUEST FOR FISCAL YEARS 1984 AND 1985

THURSDAY, MARCH 10, 1983

U.S. Senate,
Committee on Environment and Public Works,
Subcommittee on Nuclear Regulation,
Washington, D.C.

The subcommittee met at 2:10 p.m., in room SD-406, Hon. Alan K. Simpson (chairman) presiding.

Present: Senator Simpson.

Also present: Senator Biden.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator Simpson. The hearing will come to order.

I apologize for the delay.

The subcommittee meets to hear from members of the NRC on the Commission's budget request for fiscal years 1984 and 1985. The purpose is to gather information on the agency's budget request in order to fulfill our responsibilities under the Congressional Budget Act of 1974. We have the requirement to report all authorizing legislation by May 15.

The full Committee on Environment and Public Works on March 1 recommended to the Senate Budget Committee that the NRC be funded at a level of $466.8 million, the amount requested by the administration. Today's hearing will provide the subcommittee an opportunity to explore in greater detail various aspects of the agency's programs and funding requests for fiscal years 1984 and 1985.

We have the Commission submitting a budget request for fiscal year 1984 reflecting a decrease of $8.5 million from fiscal year 1983 levels, and for fiscal year 1985 the Commission has requested $460 million, a further decline of $6.8 million. For the first time then we have the Commission requesting a reduction in funding over the 2-year authorization period.

In addition, this budget request reflects a reduction in staff by almost 100 positions from fiscal year 1983 through fiscal year 1985.

This subcommittee has always seen fit to encourage the Commission to pursue all reasonable efforts to achieve economies in its operations and assure that its resources are managed as effectively as possible. In view of the reductions in both funding and staff between fiscal year 1983 and fiscal year 1985, we will be particularly interested in hearing from the Commission their views on whether the agency will be able to carry out its important responsibilities for protecting the public health and safety and the environment.

Our hearing today is also to serve a second purpose. It provides an opportunity to discuss with the Commission various aspects of the Commission's continuing operations as well as its plans for the future.

The Commission has provided us with a detailed prepared statement which catalogs the activities of the agency over the past year and its agenda for fiscal years 1984 and 1985. The Commission's statement highlights a number of significant accomplishments over the past year. Those include the publication of a proposed safety goal, substantial increase of NRC inspection presence at reactor sites, greater emphasis on quality assurance, continuing research on the source term issue, and continued progress toward a redirected nuclear research safety program. I think particularly noteworthy is the Commission's recently submitted Nuclear Power Plant Licensing Reform Act of 1983, an issue this subcommittee will examine, assuredly, in close detail in coming hearings.

Other areas of the Commission's operation appear to require additional attention both by the agency and by the Congress, and those include the Commission's policy on regionalization, a systematic evaluation program [SEP], quality assurance, the nuclear Datalink system, the license fee proposal, which is of deep concern, and the recently formed Office of Investigations.

So, today's hearing will give us the opportunity to explore these and other issues. It is a particular pleasure to have with us today all of the Commissioners as well as a number of members of the NRC senior staff. It is good to see you, and I enjoy very much my opportunity to visit with you and to hear your views individually. Those are very important to me, and I know that the ranking member of this subcommittee appreciates that also.

Chairman Palladino, welcome to the subcommittee, and you might just introduce those who accompany you other than your fellow Commissioners, or them also if you wish, and you can proceed with your statement.

STATEMENT OF NUNZIO J. PALLADINO, CHAIRMAN, NUCLEAR REGULATORY COMMISSION; ACCOMPANIED BY VICTOR GILINSKY, COMMISSIONER; JOHN AHEARNE, COMMISSIONER; THOMAS ROBERTS, COMMISSIONER; JAMES ASSELSTINE, COMMISSIONER; WILLIAM J. DIRCKS, EXECUTIVE DIRECTOR FOR OPERATIONS; HAROLD R. DENTON, DIRECTOR, OFFICE OF NUCLEAR REACTOR REGULATION; VICTOR STELLO, JR., DIRECTOR, OFFICE OF INSPECTION AND ENFORCEMENT; JOHN G. DAVIS, DIRECTOR, OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS; ROBERT B. MINOGUE, DIRECTOR, OFFICE OF NUCLEAR REGULATORY RESEARCH; ROBERT BERNERO; AND RICHARD DeYOUNG

Mr. PALLADINO. Thank you, Mr. Chairman. It is a pleasure to be back with you today to discuss the NRC's budget request.

As you noted, with me today are the other members of the Commission, Commissioners Gilinsky, Ahearne, Roberts, and Asselstine. With us also is the Executive Director for Operations, Mr.

William Dircks, and the directors of the principal offices of the Commission, who may be called upon to respond to details, if necessary.

In fiscal year 1983, the Nuclear Regulatory Commission is operating under a continuing resolution which limits our new budget authority to $462.5 million. Favorable action on a pay raise supplemental of $3.5 million would increase this to $466 million, an amount that is $13.5 million less than the President requested and $8.5 million less than was approved in the House and Senate reports on appropriations for fiscal year 1983.

We are again requesting authority for a period of two fiscal years. Our request for fiscal year 1984 is for $466.8 million, as you indicated. Our request for fiscal year 1985 is for $460 million.

Our requests represent a downward trend in real spending power. For example, in fiscal year 1981 the NRC budget approved by Congress was $452.5 million. Using actual inflation rates to date and conservative projections, it would require over $500 million to fund the same level of work in fiscal year 1984 as we did for $452.5 million in fiscal year 1981.

Since 1981 there has been a general belt tightening and to some extent a reallocation of resources within NRC. However, the main impact of this real reduction in resources has been in the NRC research program. For example, administration of the loss of fluid test [LOFT] project has been transferred to the Department of Energy as part of an international consortium. There also has been a restructuring of other parts of our research program. These actions have helped us to accommodate most of the reductions. Having said this, I must stress that we still have many technical safety issues to resolve. A healthy research program is essential if we are to maintain the adequate technical basis needed to make sound regulatory decisions.

Also, contrary to a belief by some, our total work load is not declining. The experience of the past 2 years has convinced me that our work load of licensing new nuclear powerplants will tend to stretch out over several years rather than peaking and then dropping precipitously. Further, as new plants gradually come on line, we must shift resources from the licensing process to surveillance of nuclear operations in the field.

From an overall agency viewpoint, it is essential that adequate resources be maintained to assure that we can continue to discharge fully our responsibilities to protect the public health and safety. A concern is that our estimates for both staff and funding in the mid-1980's may be nearing the absolute minimum needed to cover all of the critical tasks of our regulatory mission. To help us get a better forecast of our needs for the future, we have directed the Executive Director for Operations to examine the long-range resource requirements of the agency over the next 10 years. The results of this examination should be available this summer.

I would also point out that the agency is still widely dispersed around the metropolitan Washington area. As emphasized in past testimony, this situation has adversely affected our ability to carry out our responsibilities in an efficient and effective manner. By prolonging this problem, resources are being unnecessarily expended. The Commission is hopeful that the executive branch and the Congress can provide a solution to this problem as soon as possible.

As I stated last year, I see the present and near future as a period of transition for the Nuclear Regulatory Commission. We are making a transition from an extended period of rapid growth to one of relative stability and constrained resources.

With a tight budget, it is especially important that we make every dollar count so that the Commission's highest priorities are met. Stating our priorities clearly and concisely is an important step toward planning to meet them; it is also an important part of making the regulatory process more effective and efficient. Like last year, we have set forth the principal objectives of the Commission in our Policy and Planning Guidance for 1983. Many of the key objectives were discussed in my longer prepared statement submitted to the committee in February during your consideration of the overall budget recommendations. I might only add that, since that statement was submitted, the Commission has transmitted to Congress the siting and licensing legislative proposals which you mentioned, and which were still under consideration when we made our long submittal. We also submitted draft legislation providing funding authority for the agency for fiscal year 1984 and 1985.

The Commission's budget request was highlighted in my previously submitted statement and detailed in the Commission's fiscal year 1984 budget submission. For your convenience, the major changes in both dollars and personnel were summarized in two tables attached to this statement. I understand the answers to the questions in your letter of invitation have now been provided to the subcommittee.

Senator **Simpson**. They have. (See p. 34.)

Mr. **Palladino**. This completes my statement, Mr. Chairman. We will be pleased to respond to any questions you may have.

[The attachment to Mr. Palladino's statement follows:]

Table 1

FISCAL YEAR 1984 PRESIDENT'S BUDGET--PROGRAM LEVEL BREAKOUT

Summary data	Actual fiscal year 1982	Estimate fiscal year 1983	Estimate fiscal year 1984	Change
REACTOR REGULATION:				
$(Thousands)...............	$ 87,543	$ 94,380	$ 91,490	$-2,890
People......................	738	748	730	-18
INSPECTION & ENFORCEMENT:				
$(Thousands)...............	$ 59,544	$ 69,280	$ 70,910	$+1,630
People......................	959	966	996	+30
MATERIALS SAFETY & SAFEGUARDS:				
$(Thousands)...............	$ 37,347	$ 35,650	$ 36,280	$ +630
People......................	326	314	306	-8
RESEARCH:				
$(Thousands)...............	$220,287	$209,500	$199,740	$-9,760
People......................	276	275	250	-25
PROGRAM TECHNICAL SUPPORT:				
$(Thousands)...............	$ 24,205	$ 27,050	$ 27,520	$ +470
People......................	379	389	367	-22
PROGRAM DIRECTION & ADM.:				
$(Thousands)...............	$ 37,551	$ 39,410	$ 40,860	$+1,450
People......................	790	731	722	-9
Total $(Thousands)	$466,477	$475,270	$466,800	$-8,470
Total people	3,468	3,423	3,371	-52

Table 2

FISCAL YEAR 1985 PRESIDENT'S BUDGET--PROGRAM LEVEL BREAKOUT

Summary data	Estimate fiscal year 1984	Estimate fiscal year 1985	Change
REACTOR REGULATION:			
$(Thousands)...............	$ 91,490	$ 87,140	$-4,350
People.....................	730	709	-21
INSPECTION & ENFORCEMENT:			
$(Thousands)...............	$ 70,910	$ 74,770	$+3,860
People.....................	996	990	-6
MATERIALS SAFETY & SAFEGUARDS:			
$(Thousands)...............	$ 36,280	$ 35,710	$ -570
People.....................	306	304	-2
RESEARCH:			
$(Thousands)...............	$199,740	$193,290	$-6,450
People.....................	250	245	-5
PROGRAM TECHNICAL SUPPORT:			
$(Thousands)...............	$ 27,520	$ 27,470	$ -50
People.....................	367	357	-10
PROGRAM DIRECTION & ADM.:			
$(Thousands)...............	$ 40,860	$ 41,620	$ +760
People.....................	722	720	-2
Total $(Thousands)........	$466,800	$460,000	$-6,800
Total people..............	3,371	3,325	-46

Senator SIMPSON. Thank you very much, Mr. Chairman. I do have questions and would ask that you respond, or various members of the Commission may wish to respond. If they are particularly touched by one of the questions, please do so. I think the American public has the view that certainly the NRC is referred to as a collegial body. I see some smiles there. I think that would be ideal if that were so, and the best way to make it so is that you do share with each other especially your diversity, which is very real, and I know you do that in rich fashion sometimes.

I think it is very good for the public record for you to share that diversity here, and I look forward to your significant comments, if you care to share those with the subcommittee.

According to the testimony, we see the NRC will issue 10 operating licenses for powerplants in fiscal year 1983, 13 in fiscal year 1984, 6 in 1985, for a total of 29, a significant number of licenses in the next 3 years. The funding and staff allocated to case work in the NRR discloses a rather significant decline through fiscal year 1985, and the staff assigned to the executive legal director's office shows a moderate reduction. Why is it that the two offices most directly responsible for licensing show reductions in funding and staff at a time when you might expect to issue a significant number of license?

Mr. PALLADINO. Mr. Chairman, the numbers you quoted are not our estimates of how many plants would be licensed during the periods you quoted. They are probably based on the estimated construction completion dates submitted by the licensee or the applicants. We feel—and I open it to any Commissioners to give a different estimate—I believe the staff feels we would probably be licensing an average of six to nine plants over the next several years each year.

Senator SIMPSON. That is interesting, because we know these figures are rendered by the applicants as submitted with the budget. You have a significant difference of opinion apparently with regard to those numbers.

Mr. PALLADINO. Yes, sir, we have.

Senator SIMPSON. Could you share with us why that is and what that is?

Mr. PALLADINO. Well, we have been trying to make our own independent case load forecast and have had teams visiting the various plants. Generally, after visiting such a plant, if they see a difference of opinion of greater than 6 months, they meet with management to discuss their differences to make sure that there was no point that they overlooked. If they are within 6 months, we consider that within the accuracy of most people's ability to estimate.

Senator SIMPSON. But even if we were to take six to nine plants average, then we would have in 3 years something between 16 and 27 facilities, wouldn't that not be correct?

Mr. PALLADINO. I think that is closer to what one might expect.

Mr. GILINSKY. Senator, it is pretty hard to predict when you are talking about 2 or 3 years in the future. For this fiscal year, I would say six is an optimistic number.

Senator SIMPSON. In any event, it is a significant number, considering past and recent applications and activity. Is that not so?

Mr. PALLADINO. Yes, sir. When I first came onboard, I used to give more credence to some of the projections made by licensees. I have learned to become a little more wary until we make our own independent evaluation.

Senator SIMPSON. But you think that this budget will handle that work load?

Mr. PALLADINO. I believe so, yes.

Senator SIMPSON. Over this same period of time, what level of effort in both staff and dollars will you commit to implementation of the post-TMI requirements, and to what extent would those resources be useful in licensing activities if they were not expended for the post-TMI efforts?

Mr. PALLADINO. Well, I will have to call on someone else for specific breakdown on the dollars, but I do believe the post-TMI actions that have been taken and are being taken are important to improving the safety of the plants that we have. Now, your question related to what fraction or what resources we have been applying specifically to that point. I might ask Mr. Denton to respond.

Senator SIMPSON. Yes, Harold Denton.

Mr. DENTON. Senator, we put together a budget based on the expected work load for case work, and I did receive all the resources I needed for case work in the forthcoming years. With regard to operating plants, that is where the bulk of the NRR activity is now—in making those changes that came out of TMI or out of new Commission rules. For 1984 we are requesting 306 people to be involved in the maintenance of operating plants. That is processing the amendments that are necessary for the TMI-related issues, unresolved safety issues, new Commission rules, or changes requested by the licensees. So, about half of the NRR staff functions do go to operating plants in 1984, and I could provide you a breakdown of how many go to TMI-related issues, specifically.

Senator SIMPSON. If you would please.

[The information referred to follows:]

The resources associated with the implementation of TMI-related issues (NUREG-0737 and NUREG-0660) on operating reactors in the fiscal year 1984 budget are approximately 20 FTE's and $2 million.

Senator SIMPSON. I have three or four questions about the status of your efforts to implement the fiscal year 1982–83 authorization. One of the issues we addressed in the April 1981 hearing on emergency planning was the NRC's authority to approve a State, local, or utility plan in the absence of a FEMA-approved plan. I remember we had quite a bit of discussion about that. It was unclear, as I recall, whether you, Mr. Chairman, felt that you had the authority to approve such a plan, and so to clarify that matter we specifically included this authority in section 5 of the 1984 or 1985 authorization. What steps now have been taken to implement the section 5 authority, and are you in a position, should you receive a request, to approve the plan under section 5?

Mr. PALLADINO. Section 5 I believe was the one that referred to emergency.

Senator SIMPSON. Emergency planning, that is correct.

Mr. PALLADINO. With regard to that particular aspect of the bill, we have not had prepared by the staff approaches on implementing that authorization, but are prepared to implement the authority on a case basis if warranted.

Senator SIMPSON. When will the Commission have its final temporary operating license implementing regulations in place, and do you expect to receive a petition under this regulation for a temporary operating license before the expiration date on December 31, 1983? Do you see any need there for an extension of that authority?

Mr. PALLADINO. We also have had proposals submitted to us by the staff. We have had a meeting on that subject as well. That proposals are being modified to reflect some input from the Commission, and I would hope we still could get that out this month. Whether or not we are going to have an application that would call for a temporary license is a little difficult to say. There was a time when we thought one of the plants might be in that position. Right now I think the picture has changed.

Now, with regard to whether or not it ought to be continued, I am not sure if my fellow Commissioners would all agree with me, or even if a majority would agree with me, but I think that it would be well to continue that provision because we have quite a number of plants to be licensed, and the uncertainty which continues to be inherent in the licensing process, the hearing process particularly, suggests we may have the need for such authority in the future. I would also encourage or support authorization to allow us in the absence of FEMA-approved emergency plans to go ahead with issuing license as long as we see an approved plan, including a utility plan, or a State plan, if that is what is needed, again because of the uncertainties the future might bring.

Senator SIMPSON. Commissioner Asselstine? I have never addressed you previously that way. Do you miss this work up here?

Mr. ASSELSTINE. Sometimes.

Senator SIMPSON. Not much. Yet, probably you do.

Do you have any comments?

Mr. ASSELSTINE. I guess on the emergency planning provision I would agree with what the Chairman just said. It might be useful to have that authority on a more continuing basis in the absence of a FEMA-approved plan.

On the temporary operating license authority, I guess I am not convinced at this point that there is a strong demonstrated need for that authority beyond this year. I think what we are seeing in the operating license cases is that a fairly substantial number of plants are taking a good deal longer than the earlier projections that we had received, you all had received, from the applicants, and as a result of that, it seems to me that the construction completion dates are turning out to be considerably less optimistic than the utilities had originally projected. Given that fact—given the fact there have been some changes to the hearing process that have tended to have our hearings operate on a little firmer schedule over the past year or so—I am not sure I see a number of cases looming on the horizon where there are likely to be delays between when the plant is complete and when the hearing process is.

Senator SIMPSON. Yes, Commissioner Ahearne?

Mr. **Ahearne**. On the two areas, as far as the temporary operating license, it is a nice feature to have available for the Commission. I would encourage the Congress to continue it. But if your wish is to tie it to a specific need, then I don't really think we can show that proven need. It is a nice provision if the opportunity came that we had to have it, then we could use it.

As far as the emergency planning goes, that has turned out to be very complicated, very complicated as in the sense, without getting into the specifics of cases that are in front of us right now, the issue is going to turn I think on what kind of a plan is going to be acceptable in the absence of a FEMA approval. FEMA I believe is going to take the position for them to approve a plan, it has to be one submitted by the State, because they deal with States, as they have told us. Their dealings are directly with the State. If a State concludes that they will not submit a plan in the absence of the local government's submitting a plan, then FEMA is going to be in a position where they cannot approve a plan. In that situation I don't really at the moment see how at least for myself, if I were in that situation, I could agree that a utility plan generated by the utility in which neither the State nor the local government agreed, and if both the State and local government said we aren't participating in this planning process, I don't see how we could then say that is an acceptable offsite plan since the heart of the offsite plan has to be the involvement of offsite authorities.

Senator **Simpson**. Yes, and that is an interesting point. But it is written into the law that we will have a State or a local or a utility plant, and if the local communities choose to sit that out and the State sits that out, I doubt that the utility will sit it out. So at that point it would seem that might be a very impelling factor to get the State and local communities to do an emergency plan.

Mr. **Ahearne**. I would hope so. We are, I think, having a good test of that right now.

Senator **Simpson**. Well, that is why it is in the law. We thought that might be a good thing to put in there.

Mr. **Gilinsky**. Mr. Chairman, on that point, I think it is a good thing if the State and locality decide to participate and carry out their responsibilities. But if they are not participating, then I don't think there is a utility plan that can compensate for their lack of participation.

Senator **Simpson**. That may well be. Then we should change the law, because we give those three options.

Mr. **Gilinsky**. Well, I think we should.

Senator **Simpson**. Before I came here I was on the Park County Zoning and Planning Commission in Park County, Wyo., where, if you would force a group to do emergency planning—and this is what is happening in this country—the municipalities, especially in the area of nuclear electric power facilities, will drag their feet forever on this area or hold out for various plums in the process, and that will continue to occur on the State level and on the local level. It was thought, in the passage of this legislation, by allowing and even giving this option for the utility to prepare the plan, when they do—and they will—then the local and State groups will be galvanized into some activity to get them off their duffs, because they will not do it without some rather interesting and intriguing carrot dangling. I really believe that. If FEMA isn't going to accept a State plan or local plan, they certainly aren't going to accept a utility plan. I agree with that clearly, but in the process I think some movement will take place. It will not take place without that option.

Mr. PALLADINO. Mr. Chairman, I think we should mention that by and large, with a few exceptions, most of the municipalities and the States have worked very diligently to try to develop plans, and FEMA has been working with them to make sure that in their mind they are workable. So I would not like to leave the impression that most of them are not cooperating.

Senator SIMPSON. So there is a good compliance factor out there?

Mr. PALLADINO. Yes.

Senator SIMPSON. Both by county government and municipal government?

Mr. PALLADINO. Yes, sir.

Senator SIMPSON. How many are regional cooperative agreements between municipal and county government in emergency planning? I would just be interested. You can furnish that for the record.

Mr. PALLADINO. Why don't we.

[The information requested follows:]

Offsite emergency planning is a cooperative effort of State, local and utility organizations. The evidence of this effort are those emergency plans approved and those that are under review by FEMA. All plans whether approved or still under formal review are based on cooperative arrangements among the parties. Where these arrangements are not apparent, FEMA will not formally review the plans for approval.

FEMA has approved offsite planning for 13 sites involving 38 local governments and 11 states.

SITE	STATE(S)
Sequoyah	Tennessee
Farley	Alabama, Georgia
Hatch	Georgia
McGuire	North Carolina
Summer	South Carolina
Robinson	South Carolina
Arkansas One	Arkansas
Ft. St. Vrain	Colorado
Brunswick	North Carolina
LaSalle	Illinois
Palisades	Michigan
Trojan	Oregon, Washington
Dresden	Illinois

Mr. GILINSKY. On your earlier point, I want to say I agree with Jim Asselstine on the temporary operating license authority. If that is revived, it ought to be limited, it seems to me, to low-power operation, which is what I thought it should have been all along.

Senator SIMPSON. Are you all supportive of a continuation of the section 5 emergency planning provision?

Mr. AHEARNE. I am.

Mr. ROBERTS. I am, but for the reason mentioned.

Senator SIMPSON. Commissioner Roberts, you feel that way too?

Mr. ROBERTS. Yes.

Senator SIMPSON. Let the record show all nodded affirmatively.

In section 8 of the 1982-83 authorization, the Congress authorized the NRC to move forward with the prototype nuclear data link. There was, I remember, a lot of discussion about that, the communications system between the NRC and the licensee that the TMI accident demonstrated was very necessary. So now 4 years this month after the accident we do not yet have even this prototype system in place. You now have $200,000 of fiscal year 1982-83 and $800,000 carryover funds available to you that may be expended without the need for any further congressional activity. I would inquire into when do you expect to publish a request for a proposal soliciting bids on the prototype system?

Mr. PALLADINO. Mr. Chairman, the Commission has recently approved a staff recommendation to issue a request for proposal to select a contractor to carry out the prototype program, and a letter informing the Congress of this action and summarizing staff progress on the NDL issues we would expect to be forwarded within the next couple weeks.

Senator SIMPSON. It will be forwarded within the next 2 weeks?

Mr. PALLADINO. I would estimate that, yes.

Senator SIMPSON. Then how long will it take to have it fully?

Mr. PALLADINO. Well, the schedule extends over a significant period of time. I don't have it right in front of me, but I can get it.

Mr. GILINSKY. I think it is probably well worth mentioning, Mr. Chairman, that what has held this up is a lack of agreement on the function of the data link. Initially there was what I regarded an overly-ambitious approach to the thing. I think we have got it cut down to reasonable size, although I am not even sure about that. I think it may still be over-ambitious.

What is involved here is the extent to which such a link will interfere with the present arrangement of responsibilities at the reactor site. I would not like any such link, useful as it is to obtain information here, to undermine the relationship and the allocation of responsibility we now have at the site. There has been a lot of difficulty in getting that clarified.

Mr. PALLADINO. I think the Commission is pretty well united on the point that we should not in any way try to take over the responsibility of the licensee even during an emergency. Our primary function is to monitor information sufficiently so that we can insure that appropriate off-site recommendations are made to the Governor and the people in charge of evaulation or other emergency procedures; also, to support the licensee in any request he may have and to help provide additional equipment if that is needed and requested.

I do have an indication of how long it would take. If we go out for a prototype system, awarding the contract for a prototype system I gather is going to take about 4 months, report to Commission on final evaluation of prototype system another 12 months, report on final evaluation another 4 months, and the earliest date for initiating NDL implementation, assuming a favorable review, might be another 2 months. So it does extend over a fair period of time, but I think we would be learning a great deal in the period during which we were experimenting with the prototype.

Senator SIMPSON. I may be gone by then.

Mr. AHEARNE. It happens to the best of us, Senator.

Senator SIMPSON. I know it does.

Yes, you wanted to add something, Commissioner Asselstine?

Mr. ASSELSTINE. Mr. Chairman, I would just add I agree with what Chairman Palladino and Commissionor Gilinsky have just said. I think we have pretty much agreed on the Commission on what the limits of our role ought to be and how the data link ought to fit into that role. I also think it is worth noting that the proposal that we will be going out with will be substantially scaled down from some of the earlier descriptions of the data link. It is much more in line with the kinds of information that we have already required the utilities to monitor themselves in their safety programs and display systems. So I think both setting the limits on our authority and our role and also I think scaling down the data link proposal ought to help eliminate some of the controversy that surrounded the data link proposal. Hopefully we can move ahead on a schedule that is at least as rapid as the one the Chairman described, and hopefully even faster.

Senator SIMPSON. I think that scaling it down may be perfectly appropriate, but I think you ought to recognize the congressional intent is that we have it. So when we say have it, I just can't quite see why there should be another 18 months' or 2 years' delay by that scenario, Mr. Chairman. I think that is untoward and not responsible to legislative intent. My function, as chairman of the subcommittee, is oversight, not the kind of oversight where we see how to stab people, but how to make it work. So, I would hope you would move toward a scaled down system and get it in order so that we can have the benefit of it, because I have a real hunch if we have another transient, or whatever, there will be a lot of criticism, when people say, "Well, that was 4 years ago and they did nothing yet, and the Congress directed them to do something." So, scale it down, or however you wish to do it. I think it is important that you go ahead with it and make it usable. You have the ability to make it work.

Yes, Commissioner Ahearne?

Mr. AHEARNE. Senator, I certainly agree with your sentiments, but one of the reasons it has taken us so long is there certainly has not been a clear picture that Congress wanted us to go ahead. I am not saying you or this subcommittee, but it has been confusing whether Congress wanted it or not. The messages we get from the Congress are mixed. In fact, the most recent decision in which we finally decided, and as the chairman has described, to go ahead, there was a lot of debate at the time in which it was presented perhaps Congress doesn't want us to go ahead, they have told us not to.

Senator **Simpson**. In our conference committee—yes?

Mr. **Ahearne**. I certainly agree entirely with you. Having sat through the Three Mile Island accident and down in our control room, and sat through several other accidents, I know how desperate—whoever is sitting there is acting for the NRC, is going to have to make a recommendation or comment on a recommendation to a Governor or any one else who has to make some emergency provisions, not knowing, not having information is so desperate a feeling. That is what the purpose of this is, to try to give those people that kind of information, and it is very unfortunate it has taken this long to get this far.

Senator **Simpson**. I would just add that in the conference, that very long conference authorization, that was again expressed, however, about the data link system, I just urge you to press on in whatever conceptual view you have of it, scaled down or whatever, but I do urge that.

Mr. **Gilinsky**. It is worth saying, Mr. Chairman, this is something which is, on the one hand, potentially useful, and on the other hand, potentially dangerous, depending on how you structure it. That is why it is so important to do it carefully, and it has taken a certain amount of pulling and tugging between different points of view to get us where we are now.

Senator **Simpson**. I would say that is so. But the people of this country would have their patience aroused if they find this occurs and they find they have the same information they had at Three Mile Island. I can tell you none of us would withstand that.

Mr. **Gilinsky**. We don't have the same system.

Mr. **Ahearne**. It is not much better.

Senator **Simpson**. The lessons learned, I hope, have been learned. And that is what we have been up to for the last 3 years, or at least should have been.

Mr. **Asselstine**. I guess I just add one point. The system may be a little better, but it still relies on people to obtain information and to transmit that information over the telephone during the initial hours of an accident. I think if TMI told us anything it is that that system doesn't work very well.

Mr. **Palladino**. Mr. Chairman, I have been through several exercises involving our emergency response center and also the Ginna accident, and I can confirm from my brief experience some additional data and some more precise way of getting it, or more timely way of getting it, is very important, because many times we try to get data and it may be a half hour delayed and not up to date. Then later we get information from another source that may be the same information when we should have gotten additional information. And not all the information that is available to us is helpful in getting a recommendation with regard to off-site action. I think attention to what data ought to be available will be a valuable result of a prototype assessment.

Senator **Simpson**. I would never want to infer that little has been done since Three Mile Island. Much has been done by sincere people such as yourselves and by the NRC professional staff and by the industry and the public. So, much has been done, but I still believe that this is an important data link—and that is what it is called, that is what it is—and I think we need it.

Let me just ask a couple more questions in this area about emergency planning. I think we now have two reports from the Commission on its role in an emergency, and now in the 1982–83 authorization we see the call for a third. Is the Commission's role in emergency planning not now fully addressed?

Mr. PALLADINO. Well, we have been through some aspects of our role in a particular accident and can summarize those here. Whether or not the Commission should have other roles or could improve the way it handles the role that it feels is important to it would be the subject I believe of additional studies. But we take as our primary roles monitoring the licensee information; understanding the conditions of the facilities and environs to assure appropriate off-site recommendation, assuring they are made; supporting the licensee; supporting off-site authorities, including confirming the licensee's recommendation to off-site authorities; and keeping other Federal agencies and entities informed of the status of the incidents, including coordination with other public affairs groups. And implied in several of those is wherever we can help by making sure that equipment is provided from elsewhere, we would do so.

Mr. GILINSKY. Mr. Chairman, at the risk of going on excessively on the subject, it seems to me important to make clear that there are not people in Bethesda who are licensed to operate these plans, or generally, who are competent to operate these plants. That is the difficulty with this Data link. It is very useful to have information so we can better give advice on protecting populations offsite. But there is a certain amount of uncertainty about how deeply we should get into the operation of a plant, and some sentiment in some quarters, that perhaps we ought to get involved if we see things not going well. It is a pretty awkward and delicate issue, and it is precisely that that has made me uncomfortable. I want to be sure this Data link doesn't get us into things we are not able to deal with, or raises expectations we can't fulfill.

Senator SIMPSON. Yes, Commissioner Ahearne?

Mr. AHEARNE. Senator, I have no problem with the point that the NRC shouldn't be running plants. The difficulty I have with Commissioner Gilinsky's point is I haven't really found this big sentiment in Bethesda to do that. People who I find very knowledgeable on the reactors also recognize it is the people who operate the plants on a day-to-day basis are the ones who really understand that. So, I don't see that as this big horror that some might describe.

Senator SIMPSON. But at some point in time in some further transient or incident, however it may be defined, you, if you are on the Commission at that time, are going to be faced with a decision like that, and only you will know what to do at that time. It won't matter what is written in the statute books or regulations or anything else, and I think that is what we have to keep in mind. There is going to come a point in time when your senior people are standing there and you will have to wrench it away from them, and you will make the decisions. It won't matter what the Congress has done or the regs have done. It is a land of niceties around here, but at some point there will come an incident where responsible people will have to make decisions that are never ever defined by white paper writers and scribblers. We have a name for that. We can go through this ancient ritual of dipping a toe in and pulling it out and another regulation, another rule, another thing to present, and at some point in time, who knows, but I assume that five bright people with advice of very bright staff in the NRC will make the right decision. And if they don't, well, that will give Congress 5 years 'worth of stuff to mess with.

Mr. Gilinsky. I didn't want to lower the threshold of "and wrenching away," as you put it.

Senator Simpson. I am not suggesting that will take place, but it might. Who knows the circumstance. The thing that happened at Three Mile Island was the least possible thing thought to happen. We spent all our time looking at the big gun barrel, and that is not what did it.

What is the status of the Commission's effort—this was a particular part of the debate in the Senate—on quality assurance and, in particular, on implementing the provision included in the fiscal year 1982-83 authorization? If you could summarize what you see as the Commission's major accomplishments in this area of quality assurance, as well as those areas where additional effort is required, please.

Mr. Palladino. Well, there were a number of provisions with regard to quality assurance that were mentioned in the bill. The section that directs the placement of inspectors I think we have fulfilled. All sites at which construction is greater than 15 percent complete now have resident inspectors.

The section also mandates a study of existing and alternative programs for improving quality assurance, and such a study is underway. We were also asked to pick sites at which we can test the alternatives, and that is underway, and also pick sites both where there have been problems and where there have not been problems, for further study, and we will soon have identified those. I think this is part of the pilot program that was called for in the bill.

Now, we also in recent months have been looking at quality assurance reform within the Commission itself and have identified that many of the problems that arise with regard to quality assurance can be traced back in large part to lax or inadequate attention by top management at the utility in making sure that the program that was underway was suited to meeting the needs of the project. We have been directing the management attention to these problems, also providing indoctrination seminars as necessary for them, encouraging training throughout the organization so that they sense quality assurance is not something that you hose on top of the whole operation, but rather is inherent in all the work everybody does. Indoctrinating people and training them in that direction we feel is a very important part of maintaining quality assurance.

Other things that we have discovered is that in our early attention to quality assurance we did not give a great deal of attention to quality assurance on design matters because we took for granted people doing the design were doing it right. It turns out the interfaces are the sources of trouble, and getting attention to those interfaces are some of the other improvements made.

Now, we do have a Director of Inspection and Enforcement here who can probably add to my comments, if you desire. Maybe the other Commissioners would want to also.

Senator SIMPSON. If he would wish to just briefly address the issues of quality assurance. Please give your name.

Mr. DEYOUNG. Richard DeYoung.

I think I can only add, he has touched on the major point, and this is the recognition by management and the utilities that quality assurance is a problem. They have to recognize it, and it starts at the very beginning of a project. You can wait. It starts with the letting of contracts, the hiring of the initial people, and I think it is essential that the individuals in charge of these utilities recognize this, and I think the message is beginning to get across it is their responsibility. They have a terrific financial investment there of their stockholders, and I think slowly the message is getting through. We have seen improvement in many areas. More improvement is needed, but I think we are well on the way.

Senator SIMPSON. A very obvious awareness that maybe was not there 4 years ago?

Mr. DEYOUNG. It was not. In certain places it is still no there. And the communication from the top of the organization right down to the bottom that the chairman has referred to I think is essential, and we find a constant lack of communication throughout the nuclear industry in the construction projects especially.

Senator SIMPSON. We will pursue that, and thank you.

Mr. GILINSKY. My own view, Mr. Chairman, is we need to do more in assuring ourselves that the quality assurance organizations are adequate for the job at the various sites I think there ought to be some kind of certification process for each major phase of construction. It takes too long to gather all the violations and mistakes, and to conclude the quality assurance system itself is not right I think there needs to be more attention at the outset to a thorough and competent quality assurance process.

Senator SIMPSON. But that could always be done internally within the NRC.

Mr. GILINSKY. Yes.

Mr. PALLADINO. One other comment with regard to certification. I think an important step in getting management's attention has been the step requiring the chief executive officer to certify the plant was built as designed. That has certainly brought their attention before they make that certification to make sure the plant was built as designed, and even more that it was designed properly.

Senator SIMPSON. You did have one more comment.

Mr. ASSELSTINE. Mr. Chairman, I was just going to add one other thought. I agree with Mr. Gilinsky's point. There has been in our own program too some failure to identify early on situations in which there has been a fairly widespread breakdown in quality assurance, and I think it is useful for us, and I think we are doing this, to look at our own inspection program to decide how our program needs to be improved so we can identify these problem situations early on, rather than later after a plant is substantially complete and after a large number of problems may exist. I am not sure I fully agree with the certification approach by us of each of the elements or stages of construction, but I think there are some useful examples in some of the plants that are now underway for some internal agency QA audits at various stages of construction so the licensees know early on if they are problems rather than after major problems have been recorded.

Senator SIMPSON. We will return to that at some future time because we want to keep closely aware of that.

This next one is one of the issues I know all of you have an opinion on. We have followed the Commission's proposed policy of regionalization, and I think that that makes some sense in certain areas. In fact, I was a strong proponent of relocating the uranium recovery licensing branch to Denver, not for some wild provincial reason, but it seemed to me it ought to be put where the uranium is, someplace in Colorado, New Mexico, or Wyoming, rather than somewhere else. Personally, I hope it will work. I compliment you for your efforts to make that program work well, because that is where mining and uranium recovery will always take place, at least with the present geological data we have.

There are other areas I am somewhat less convinced for the need for regionalization, and in visiting with all of you personally, I have a knowledge that you also feel that way. In particular, these activities associated with operating reactors that involve issues I think the Commission should examine carefully and perhaps pursue on a trial basis in the initial stages prior to making a commitment to a transfer of those activities to the regions.

What are the views of all of you on that issue? Could you comment on the steps that you propose to take to insure a sufficient technical staff here in Washington and to allow you to parcel out your functions and provide the necessary uniform guidance, which obviously would have to do, to guide the regional functions? Any one of you that would care to respond to that.

Mr. PALLADINO. Let me start, and I am sure that I will stimulate response from many people.

What we are trying to do with regard to regionalization is to bring our activities closer to the place where the work is being done and thereby effect some efficiencies and effectiveness that we might not otherwise get. For example, when we talk about licensing actions, we are not talking about giving to the regions licensing actions until after we have had the operating license granted from central headquarters and gained a year's worth of experience with that plant and in the process built up interaction between the region and the headquarters here.

We have had a number of licensing actions. As a matter of fact, when I came onboard, something between 5,000 and 6,000 that had just backlogged, and the system that was in existence was not bringing that number down. Giving some of those to the regions would expedite them without any loss of safety because some of them are rather perfunctory approvals that somebody just never got around to doing because there are other things to do. Those people in the regions can determine what is important, what is hampering the operation, and they can factor that in and carry on some of these licensing actions. But I do want to emphasize they are licensing actions that relate to topics that would arise after the OL's have been given and a year's operation has been achieved.

Now, we have been proceeding I would say cautiously with our regionalization. You have got to take certain steps along the way. We have tried to pilot test as many of the items as we possibly could, and even some of the licensing actions we are giving are in the form of further pilot testing.

For example, we have had the inspection and enforcement actions regionalized, decentralized, for some period of time. We have also undertaken steps carefully in giving selected materials licensing capabilities to the region, reactor operator licensing, emergency planning, State liaison, and requalification of operators, and have been using what we learned to set the stage for our future actions.

I can add more, but maybe I should let my colleagues speak.

Senator SIMPSON. I know this issue will take longer than 10 minutes. There are some rather divergent views on this issue. My good colleague from the Judiciary Committee, Joe Biden of Delaware, the ranking member of that committee, is very interested in a recent event with regard to the Salem reactor 1. He has some questions that he would like to propose to the Commission. Feel free to go right ahead.

Senator BIDEN. Thank you very much, Mr. Chairman, for allowing me to come back to the committee I first served on when I came to the Senate.

I have come to this forum today while you have the Commissioners here to get some answers to a few basic questions about the incidents that did occur at Salem 1 over February 22 and 25, and about the NRC followup of that event. I believe the failure of the so-called failsafe safety mechanisms of the Salem plant on these dates and the necessity to rely solely on human initiative in the plant's shut down significantly undermines the limited credibility the public places in its operation. I need not tell you gentlemen that Salem 1 is in New Jersey, but the only thing that separates it from Delaware is 12 miles maximum, and the main part of the population is less than 3 miles across the Delaware River

As you are aware, I have already written to the chairman asking a variety of questions which I believe should be made public prior to any action to restart the plant. Although I have not heard from the NRC formally, I have been told they are making a decision on a restart as early as tomorrow. I am not sure it is true.

I would like to take this opportunity to just ask three questions, if I may.

I want to set out at the outset, which is probably already obvious, that I know a whole lot more about MX missiles and Mark 12A warheads and our nuclear war fighting capacity than I do about our nuclear plants. I am certainly no expert, as my colleague here has come to be. But on the 22d and the 25th of February, I am told that the Salem plant failed to respond to an automatic signal to shut down the nuclear reactor, which you folks call a scam, I believe—scram, s-c-r-a-m.

You can tell I am from the Judiciary Committee.

We have become accustomed to scams and scrams, although I am beginning to wonder if this is a scam. I don't know.

Now, as I further understand how this plant works, when the safety mechanism fails, the part you call the under voltage trip breaker, basically circuit breakers in reality, not one, but two failed. So at the point of failure both the primary and so-called fail-safe backup built in for redundancy failed.

Mr. Chairman, could you briefly describe the event that occurred at Salem and its safety significance at this plant and other plants, and also describe what action has been taken by the Commission in response to the failure?

Mr. Palladino. Senator Biden, I will go as far as I can. If you want more detail, I have plenty of people that can provide more detail.

But the significant events I believe were on February 22 and 25. There was on the 22d an event that could only be attributed to the failure of the breaker in retrospect, because of the almost simultaneous action of the automatic scram and the manual scram. But in the situation which I gather was on the 25th, it was quite clear that the breakers had failed to open. That, especially in view of the redundancy, we deemed to be a very serious situation. Now, the operator, after waiting I think it was close to 30 seconds, finally manually scrammed the reactor, and fortunately because of different ways the circuits were arranged the backup scram was able to bring about a shutdown. The staff recognized that quite rapidly as a very serious situation and prevented the reactor operator from thinking of starting up until the situation was examined.

Senator Biden. I understand the plant was running about 20 percent capacity.

Mr. Palladino. I'm sorry. The decision won't be made tomorrow.

Senator Biden. I understand that the plant was running at about 20 percent capacity then. What would have been the case if it had been running at near full capacity? Would it have made any difference?

Mr. Palladino. We might have had some more serious consequences.

Senator Biden. Like what?

Mr. Palladino. Although the situation leading to a call for a scram might have been different, if it had failed at a higher power and there was a need for a scram, I think it might have been more serious.

Let me ask the staff, because I am sure they have looked at that.

Mr. Denton. My name is Harold Denton.

It would have definitely been more serious at full power. It would have been what the Commission has worried about for some time, an anticipated transient without scram, when the control rods don't sink and the reactor is continuing to generate. This reactor has more tolerance for this phenomenon than other designs, so it would have led to lifting of the relief valves or would have descended on the operator actions to manually scram the plant or use the poison system to shut the plant down. The plant can't stand to be left at full power with no way to remove heat from the steam generator.

Senator Biden. As I understand it, either of those alternatives assume someone manually taking action and being alert to take that action.

Mr. DENTON. That is correct, sir. These relays have two ways of being activated. One is through the automatic scram system, which is where the relays failed. Also, an integral part of it are relays which are activated by a scram button on the panel which an operator can hit. He recognized that in 25 or 30 seconds that the control rods had not gone in even though the signals indicated a scram should have occurred. So when he hit the scram button on the console, the backup relays did open and the control rods went in.

Senator BIDEN. If that had been 5 minutes instead of 30 seconds, what is the difference?

Mr. DENTON. It would not have been any problem at the power level they were at—20 percent power. The powerplant has a lot of tolerance at lower power.

Senator BIDEN. At full power what would it mean?

Mr. DENTON. Five minutes would have been a long time and there would have been a lot of steam in the containment during that period. I don't think there would have been fuel damage in this particular plant if it had taken as long as 5 minutes, but it would be blowing a lot of hot steam into the containment because it was not removing heat in a normal way.

Senator BIDEN. Did any of you make an onsite inspection?

Mr. DENTON. No, sir; none of us here did, but we have had teams of people at the plant. We have taken relays to our consultant. The utility has replaced the relays with new relays. The direct cause of the failure appears to be poor maintenance on the relays over the years. They were worn because they were not lubricated. They are all being replaced with new relays. We don't intend to make a recommendation to the Commission about restart yet. We are meeting with the company today, going over the management's contribution to this problem. It will be next week or so before we can be in a position to recommend the actions we think are necessary for the plant to resume operation.

Senator BIDEN. Last question. It seems as though, and again I acknowledge I am no expert on this, but it seems as though the Salem plant has a whole lot more trouble and maintenance problems than any plant I read about. As a matter of fact, I think it was called the Sandia report indicated that the Salem plant was one of the most troublesome of the nuclear plants. Let me ask you, obviously, it seems like the plant is not managed well. It is always shutting down, never at full power, and quite frankly scaring all of us. Is it as bad as the darn thing looks?

Mr. PALLADINO. Why don't I ask Mr. DeYoung to comment on that.

Mr. DEYOUNG. The Salem plant is not one of the best run plants as far as I am concerned, that we do see some problems there we have to address. I think it is very unfortunate that we have to wait for something to happen of this type to focus our attention on management problems in plants, but because of the resource limitation we don't have the opportunity to do this routinely, except for problem areas. I think this gives us a very good opportunity to look very closely at the overall management of that plant and that operation, and we intend to do so.

Senator BIDEN. I appreciate your candid answer, and I hope to God you do.

Mr. Chairman, I won't take more time. I would like permission for three requests, if I may.

Senator SIMPSON. Please.

Senator BIDEN. One, I have a total of six more questions, if I could ask they be answered for the record.

Senator SIMPSON. Without objection, so ordered.

Senator BIDEN. And if we could include the letter that I sent along with any response, unless the response is much too lengthy, that would get in the record.

Senator SIMPSON. The response to your previous letter?

Senator BIDEN. Yes.

Senator SIMPSON. Yes, that will be entered in the record.

Mr. PALLADINO. I wonder if I might make a comment with regard to your letter.

Senator BIDEN. Yes, Mr. Chairman, please.

Mr. PALLADINO. I know we will take into careful consideration every point that you have made, and if we are not satisfied I am sure this Commission will not let this plant restart. However, with regard to being able to respond to all questions before the restart, inasmuch as we get comments from a number of different people, all I can say is we will try, but the timing may be such we may not be able to get the response out before that decision is made to restart.

Senator BIDEN. I understand that might be the case.

A couple other things I would like to ask if I had more time. Which one is Mr. Gilinsky?

Mr. GILINSKY. I am, Senator.

Senator BIDEN. I have several questions specifically for you relating to your comments, which I read with some interest, that there are some very serious things that happened here. I don't understand how plant replacement parts that are considered safety grade may have been mislabeled during recent maintenance. If this is mislabeled, what the heck else out there is mislabeled? But you all know your business and I don't, but I hope to God you all know it well.

Senator SIMPSON. Let me share with you, Joe, I know of your interest in many things and have worked with you for 4 years, that when I came on this subcommittee, indeed, I had those same deep reservations. The longer you deal with these individuals, I think whoever may hold the slot, but also the professional people with the NRC, you see many of the senior ones here, will give you a better sense of confidence. They will provide a response.

I think there were two more redundant systems that they could have called, and an ancient one that you and I both perform, you go hit the circuit breaker with a club, and if that doesn't work you hand crank the control rods down into the system. Is that not correct? That is another method; is that correct?

Senator BIDEN. Could that be done?

Mr. PALLADINO. The thing can be driven, but I am not——

Mr. DENTON. They can be driven in, but they can't be directed, or hand cranked individually. And then the panel is accessible so the operator could, if need be, manually make the breaker disengage if it failed.

I would like to comment as to why this would happen. The quality assurance on these breakers during this period was really abysmal. It turned out they had been left off the safety grade list of equipment, they had not been lubricated since the plant went in operation. They were worn. Our inspection of the breaker shows it was definitely age related. The important questions after replacing those breakers are: How did that come to occur, how did it fail to be on the correct list, and how did the company not pick this up earlier?

Senator BIDEN. I am really going to reveal my ignorance here. What in addition to putting the plant right, can be done? Are there any penalties available? Can we take those guys out and punch them? What can we do? Other than the economic disincentive for not wanting the plant shut down, what penalties can be imposed for that? It sounds like negligence to me.

Mr. PALLADINO. There are a number of courses of action we can take, fining being among them. I think keeping them shut down until we have this thing under control perhaps is the most serious thing that probably we will do. I am not saying we won't fine them, but I think the costs involved in the fining are generally less than the cost of keeping them shut down.

Senator BIDEN. I am sure that is true, but it is awful hard for chairpersons of the board to explain to their board members and stockholders why they were fined. It doesn't endear you to your constituency.

Mr. GILINSKY. Senator, let me add that in addition to maintenance failure, the thing I found most particularly worrisome was the failure to identify the first of the two events on the 22d as in fact being a failure of the automatic system. I find that very hard to understand. We will get the details next week and we will know more about it.

Senator BIDEN. Would you be willing to talk with me about that, not in a formal hearing, and explain a little more about it?

Mr. GILINSKY. Yes, sir.

Senator SIMPSON. You will find each of those gentlemen are very accessible.

Senator BIDEN. Thank you, Mr. Chairman.

Gentlemen, I really appreciate your efforts, and thanks a lot for taking the time with me.

Senator SIMPSON. Just curiously, was not that plant listed on what we referred to as PRA, the problematic risk assessment? Wasn't that plant listed in rather significant ways in the PRA?

Mr. BERNERO. Mr. Chairman, my name is Robert Bernero. I am the Director of the Division of Risk Analysis.

The Salem plant was singled out in some way in the Sandia report which received some attention last November. That report was calculating the consequences for the worst sort of accident that could happen at nuclear plants. And the characteristics of the Salem plant, having Wilmington, Del., so close but far enough away that you could get very improbable weather conditions to move a puff of radioactivity to a population center, led to Wilmington, Del., appearing in the list, therefore, the Salem plant as having high consequences, deaths entailed in the worst sort of accident sequence, and that is how it appeared.

Senator SIMPSON. I see, not necessarily maintenance wise or equipment wise?

Mr. BERNERO. No, that study was merely examining the sites and risk characteristics of typical light water reactors. It did not make a probablilistic risk analysis of the Salem plant.

Senator SIMPSON. That is helpful to me. Thank you.

Back to regionalization. Do you want to continue? I think you had just completed your remarks, Mr. Chairman.

Mr. PALLADINO. Yes, I had made a few remarks with regard to regionalization.

Senator SIMPSON. Did you have any further remarks?

Mr. PALLADINO. I was pointing out with regard to licensing actions that were done at the regions these were done only after the plant had received an operating license and a year's worth of experience had been obtained. Also, that many of the licensing actions remaining to be done had been accumulating within headquarters. This gives us another reason for regions to handle them. They can handle them by knowing better what is involved at the plant, which are important, which are not. Also, I was indicating we were taking this regionalization on a step-by-step basis; we were just not jumping to give every region every activity, but we are doing some pilot testing, and I had indicated some of the pilot tests we had done. Then I suggested maybe one of my colleagues here would like to pick up and develop other points.

Mr. GILINSKY. Since Commissioner Asselstine is the author of some views in the submittal to you, I think it might be best if he gave his comments. I had asked that the response show that I agree with him entirely. Unfortunately, it didn't make it into the final copy.

Senator SIMPSON. I have read his stuff before. I will wait for his oral response. When he would talk to me I would say write it down. When he would write it down I would say talk to me. So go ahead please.

Mr. ASSELSTINE. There are many aspects of regionalization where I agree entirely with what the Chairman has said. I think uranium mill licensing responsibilities was an excellent function to transfer out to the region, and I think there are other areas that the Commission has agreed to start moving to the regions or where the Commission has already had some pilot efforts underway that are useful areas to transfer to the regions.

One area where I guess I differ from my Chairman on this is on the transfer of licensing authority for operating reactors. I am concerned there are several new problems that may well be created by transferring these functions out to the regions. One of those is we will be separating geographically the licensing people, that is, the project managers for these plants, from the technical people in the Office of Nuclear Reactor Regulation that they have to rely on for much of the technical analysis. I think that is going to cause some problem. Right now they are located in the same place, and I think it is very easy for the projects managers, the licensing people, to coordinate the technical support work that is necessary to make sound licensing decisions with the technical people who are right here at headquarters.

Second, I think we are going to lose a lot of the pool of experience that now exists in the project managers by transferring these people out to the regional offices and by dispersing them. Let me give one example on that.

As I understand it now, all project mangers for Babcock and Wilcox plants are all located in one unit in Bethesda, where they can discuss things together, where they work close together. Under regional transfer of licensing authority for operating reactors, those people would be dispersed all around the country, scattered in the five regional offices, and that is going to be counterproductive to making sound licensing decisions.

I also think regional operating reactor licensing authority is less efficient. Given the present staffing and budget constraints, I am not sure it is a wise expenditure of resources. We are already finding out in order for regionalization to have a chance of working once the functions are transferred to the regions, our program offices have to literally inspect the region's performance or audit them in order to insure that the job is being done properly. So where now we have one office doing the job, under regionalization of operating reactor licensing authority we will have regions doing the job, with the program offices having to audit that performance. We are already finding that a time-consuming and resource-consuming task. In fact, one of our regional administrators recently noted the burden was such he had to cancel other functions, including inspection.

I guess the final concern I have is it is going to be much more difficult to assure uniformity and consistency in decisions. By dispersing these functions out to five different regions of the country, we run the risk, in essence, of having five or six NRC's rather than one.

The Chairman is correct that we have had some success in transferring some functions to the region. My own feeling is those pilot programs don't provide the information we need in the operating reactor area to decide whether it is wise to transfer this responsibility for operating reactors to the regions. The other areas, it seems to me, are very different than the operating reactors, and what we need is some more limited experience in moving the licensing responsibility to the regions for operating reactors. That is why I propose a much more limited approach than the Commission has now adopted. Under the Commission proposal, licensing authority for the 49 operating reactors would be transferred to the region by the end of fiscal year 1985. My own view is we ought to scale that substantially down to just a few plants and see how it works, and only after we get some information on it should we go beyond just a few plants to see what the disadvantages are and see what the benefits of regionalization are and whether they outweigh the disadvantages.

Senator SIMPSON. Yes, Commissioner Gilinsky?

Mr. GILINSKY. I agree entirely with Jim's comments, and I add there is a substantial benefit having the licensing people report up through one chain and the inspectors report up another one. There a value cross-check between the licensing people and the inspectors when you keep those separate, which would not be the case if you put them all together under one person in a region.

Mr. PALLADINO. But I think there is a point to be made there that the licensing actions are still the responsibility of the Director of Nuclear Reactor Regulation and that oversight will still continue.

Mr. GILINSKY. Not with the license amendments, as proposed. They would be issued in the region.

Mr. PALLADINO. But the oversight activities would still be his, just as they are now.

Senator SIMPSON. Let's have any other comments.

Mr. AHEARNE. I would just like to make a few other points in favor of regionalization, or whatever some people call decentralization, but the movement out of functions into the field is basically the point.

I think we have to keep in mind the NRC activities really are moving into the field. That is, most of the issues over the coming years will be field issues. We are going to a mode where most of the reactors are operating reactors, not reactors whose applications are being reviewed. We are going to a situation where there is more involvement with States. States are getting more concerned as there are more reactors and there is more understanding of radioactivity control, the low level waste compacts, many State actions are increasing. There is a tendency in Washington, not ascribed to the legislature, a view of sitting on the heights of Mount Olympus and putting out directions. The regional people I think have a better perspective. They are certainly in many cases hundreds of miles away from the licensees, but they have a different perspective when they are out in the region. So I think those are arguments saying why it is better in many ways for the NRC to start moving more of its work into the field.

We have had some pilot programs, that is true. But I think the resident inspector program, the materials licensing programs have shown very positive benefits, even though they have still had to concentrate on this question of how do you keep policy uniform, how do you make sure the central headquarters is in contact? The ACRS has criticized this by raising some questions. One of the things they did is say we ought to look at the FAA's report. There was a report done on the FAA in which they criticized the FAA for being too regional. If you read that report, you notice that the reviewers there said that the FAA had no central core and they were recommending the FAA get a central core of compentence at its headquarters because the FAA had all its stuff in the regions. We are at the other end of that pendulum. We have all our staff at headquarters and very little in the region, and this is a step moving some into the regions.

As the Chairman just mentioned, the exemption for licenses would be done by NRR, a license amendment would be reviewed by NRR. If even by the end of 1985 in which one has this very large number of operating reactors whose program managers will be in the field, over 80 percent of the people involved in reactor regulation would still be in Washington, would still be in NRR. So the major core of the competence of the agency in that area would still sit back in the headquarters, and generic, unresolved issues would be done here. Obviously I am supportive.

Mr. ROBERTS. I support it. There is no need to repeat what Commissioners Asselstine, Gilinsky, and Ahearne have said. I think the advantages of regionalization outweigh the potential disadvantages. However, we should recognize what those potential disadvantages are, and I think the chairman's characterization that this is being done cautiously and thoughfully is quite accurate. This is not a precipitous, shoot-from-the-hip concept. For me personally, the major pitfall I see is the potential for a lack of uniformity region to region, and that is something we are going to have to make sure our regional administrators understand and they communicate and prevent this from happening. But, on balance, I think this is a very proper step.

Senator SIMPSON. Thank you.

Mr. PALLADINO. Mr. Chairman, I would like to make a comment. Commissioner Asselstine has raised a number of important questions, the staff has raised a number of them themselves, and by debating them and taking positions on one side or another on particular points doesn't mean these items are going to go unattended.

Senator SIMPSON. I thank you, and I think that is what the American people really expect out of this Commission, that you do have differences and you do try to hammer them together and you do keep in communication. I think they believe that the Senators and Congressmen are in communication. What a laugh.

You do get to know your colleagues here, but unless you are thrown into conference committees and some very important things like that, you do not get to the cross-fertilization of ideas and thought from people on both sides of the aisle. That is very important to me. It helps me grow a bit. I think it is very important to you, because I think that that is exactly what the people visualize of this Commission, that it should be very diverse people, very diverse backgrounds—scientists, nonscientists, lawyers, nonlawyers—kicking it around.

Let me go on to about three more questions, then I am going to have to submit the rest of them in writing. We will come back to that issue.

The agency budget request for fiscal year 1984 and 1985 includes approximately $80 million to support the Commission activities in the area of source term work. I wonder if you could just give the subcommittee a brief summary of the nature of work that you have underway, when you might expect to have result from that work, and to the extent that you now know what the early results suggest for the Commission's regulatory activities there?

Mr. PALLADINO. Mr. Chairman, I wonder if I could turn that question over to Mr. Bernero.

Mr. BERNERO. I am Robert Bernero. When I speak to you now, I am wearing my other hat, not as the Director of the Risk Analysis Division, but as Director of the Accident Source Term Program Office.

Senator SIMPSON. A Renaissance man of the NRC. Go right ahead.

Mr. BERNERO. If you could bear with me, I would like to touch on a few points of background information before giving you a status report on the nature of the work.

In 1975 the reactor safety study assessed the risk of the first 100 plants in the United States and found it to be small. Now, it is widely believed that the reactor safety study consistently used realistic estimates throughout its work. It did not. In fact, when those scientists who did the Reactor Safety Study looked at the physical phenomena associated with core melt, they found insufficient data to do realistic models of the physical processes, so they used simple, bounding analyses to describe what comes out when a core melt accident occurs. That is what we call source term.

Now, since they were finding or asserting that the reactor risk was low, they saw little incentive and no data to support going forward with that. However, if you would make a realistic estimate of what comes out in a reactor accident, a realistic estimate of source term, you have to look at the phenomena that cover the generation, the release and transport of radioactive material from the overheated core into the reactor coolant system, through the piping, out whatever opening is involved, across the containment building, and then out of the containment, if and when that containment fails, and you have to assess this under these phenomena and quantitatively estimate what that scenario entails, and this has to be done over a whole range of reactor accidents, all the different kinds of accidents that could happen.

Now, the research program we have is focused on understanding these phenomena and providing analytical models, computer codes, as most people will think of it, computer codes that will describe these processes realistically over the range of severe accidents, the ones that dominate risk, and also provide the physical data which will validate those codes which will give you the confidence to say the code predicts this to happen, and I can believe it because experimental data support it. We are in a number of national laboratories which are using a variety of work that is done here in the United States by the Government establishment in the national laboratories as well as work in foreign countries. We are closely coordinated with industry-sponsored work for the Electric Power Research Institute and the industry degraded core group [IDCOR], and our contractors are preparing analyses for particular plants, a set of representative nuclear powerplants. That set covers the range of designs we are interested in and these analyses, in individual reports, are being subjected to an extensive peer review, and it is somewhat expensive too. The peer review panel we are using here for this periodic work is broad based. It comes from the specialists in the United States, from the national laboratory establishment, from the industry, reactor vendors. We have people from the international community. We have this broad-based review of each of the reports and of the summary reports at the end. We feel very strongly that this peer review is necessary. If this work is to be at all useful in the regulatory process, it has to have a broad basis of technical review and recognition.

Now, the schedule for this work as we have right now is a set of reports on each of these plants, and they should be completed later this year. The documentation of the data base that supports these models will come out at the same time, and our appraisal of the risk or regulatory significance of this, which includes the NRC staff commentary and positions, will be available at the same time.

While we are working on that source term data development we are closely coordinating with the Environmental Protection Agency and the Federal Emergency Management Agency. You should recall that when we deal with the reactor accident emergencies we have to work with EPA to set the standard for controlling offsite exposure in reactor accident conditions and with FEMA for setting emergency response requirements. Now, we are working closely with their staff. They are interested in reevaluating, as we are, the emergency response requirements here in the United States based not only on this new data that is coming out, but on the extensive experience in emergency response implementation of the last 5 years. With our close liaison with them, we expect to establish a technical understanding with their key staff on what information is needed, and to come to the Commission at the end of the year with any source revisions that are then technically justifiable and the implications in the policy requirements for NRR with respect to emergency planning requirements.

Senator SIMPSON. Do you have anything to share with us as to early research results? I am not trying to elicit something that is not for presenting to the public, but what are your findings?

Mr. BERNERO. The first report that came in was Surry, a pressurized water reactor in Virginia, and our peer review process took place the last week of January, and I think it was extremely successful. I think the judge of a successful peer review by coworkers is if the ears of those being reviewed turn red and tingle, and they did. It was an extensive commentary from a lot of real experts. We have evaluated the comments ourselves, as well as having the contractors doing the work evaluate the comments. We are in the final stages of rereviewing our schedule. The work indicates and the comments indicate we have to do some more homework this year, but that the extensive analysis and data required for a reasonable conclusion of this work later this year is there. It is quite promising now. We know we have a conservative source term from the reactor safety study, and we aren't going to change that unless two conditions are there, one is technical justification and the other that it is worth changing that, that is, there is a notable or significant change.

Senator SIMPSON. I think that is going to be a very important arena there, I believe, and I appreciate very much your remarks. Thank you. Very helpful. Very lucid.

Just a couple more here. The Commission recently submitted a legislative proposal to improve the efficiency and effectiveness of the licensing process for nuclear facilities, and we are going to deal with that in a separate hearing, but I want you to know that is something we are going to be pursuing with great interest and I share that with you. I have reviewed your proposed legislation and will review the proposed legislation from DOE and the proposed legislation from the Senate committees that have dealt with it in the past. I share that with you.

I also watch with great interest the Commission's proposal to modify the existing fee schedule, and there are two issues I would like to have your comments on.

The fee schedule was last modified in 1978, and at that time modifications were made to reflect actual costs of processing license applications and amendments. The latest proposed revision which was based upon costs in 1981 indicates that for many of the actions the fees will almost quadruple. My question is why is it that the Commission is proposing to raise these fees by as much as four times the 1978 level when the basic statutory authority governing the applications, that is, the Atomic Energy Act and NEPA, is substantially unchanged?

Mr. PALLADINO. Well, Mr. Chairman, I will make a few general comments, and there are members of the staff who could respond more specifically and add to what I have to say.

Our target, as I think we are asked to do by the Congress, is to try to recover as many of the costs as we can, and this is what has led to increases in the fees. Some of the fees may have at the beginning been much less than they should have been to try to recover the costs. Since that time also inflation has come about. This has resulted in a need for a complete reevaluation. Some of the costs have not only gone up, but for most of them we used to have a cap. Now we won't have a cap on them, mainly because putting on a cap interferes with the concept of recovering costs. Quite a large number of licenses, such as those that are related to material licensing, while they have gone up, are fixed fee kind of licenses, and for a vast majority of the users that concept embodies a notion that they know what they are going to have to pay for any particular service.

Senator SIMPSON. You mentioned the cap, and you proposed to lift the cap on the fees that are charged. The cap was a feature of the 1978 schedule, which I would believe would insure that the fees charged were "reasonable" and give the licensees some ability to predict what would be charged. I think that proper attention has not been paid here to many of the smaller licensees, especially those who are unable to pass on any such fees through to rate payers. That is a reality. But this proposal certainly generates significant concern to those people, and we tend to think only of the big ones. You are going to have a cost here which was maybe $30,000 a few years ago, then went to $60,000, now could go over $250,000, and these are not licensees who have this ability to pass it through.

It is admittedly provincial because I represent a State where there are small licensees, and it is an area of concern to me, and I admit that at this point. I do think that rather than a quadrupling situation with a lifting of the cap, which leaves some of them in shock, there has to be a better way to prepare them for this kind of impact.

Mr. PALLADINO. Well, we have sent this out for comment, and I am sure they will comment.

Senator SIMPSON. You just had one.

Mr. PALLADINO. Yes, sir. And looking at the table before me, uranium is the area where we have gone up by quote a bit; certainly your magnitude of four is in there. However, in some of the others the range has not only gone up in total, but the bottom part of the range has also gone down.

Senator SIMPSON. Let me share with you, Mr. Chairman, because I think it is important at least certainly in the States that produce uranium—and I hope the comment period will be thorough in this area, because what will happen in the area of uranium, it will go from a range of $107,000 to a range from $208,000 to $343,000 with no cap; in situ, $66,000, will go from $100,000 to $191,000 to $258,000 with no cap; R&D will go to something between $23,000 and $91,000 with no cap; and refining mill concentrates, $107,000 presently, will go to $259,000 to $407,000 with no cap; and just ion exchange and/or buying changes will go from $140 to $12,000 and $54,000 with no cap. I just think that is unacceptable.

Mr. **Palladino**. I certainly acknowledge and recognize that your comment is based on the experience of many years with these people. But if we are to try to recover our costs, the numbers do go up in the magnitudes that you indicated. However, I think the examination of the possibility of caps is something that the Commission will probably undertake.

Mr. **Roberts**. Well, I tried that but it didn't work.

I share your view, Senator.

Mr. **Ahearne**. It is my understanding the law we follow says we are supposed to recover our costs. Is your concern that we should do a phased process or are we misreading the law?

Senator **Simpson**. No, I have no great quarrel with the recovery of costs, but at a time when the industry is rolling over on its back, you just couldn't pick a more inauspicious time. You have an industry that in New Mexico and Colorado and Wyoming and Utah is on the ropes, and you had maybe 6,500 people working in my State and now it is down less than 1,500. They are struggling. They are trying new processes and in situ, and it just seems to me that there is a method to do that—not only with quadrupling the fee and then lifting the cap—that you deal with the industry that is the very essence of what we are in this room for. You have got to find it, scratch it out of the ground and then start with all the important things with refining and enriching. But you start with that old stuff out there under the sagebrush, and you can't get that done with fees and hammering like this.

I think that the cap was to insure that the costs will be reasonable and limited while still allowing the NRC to recover costs. I think that is something that I would hope would be recognized in the process.

Mr. **Palladino**. I gather the question is not only putting on a cap, but there is interest in what the level of the cap might be.

Senator **Simpson**. Yes.

I am very pleased that you were here and sharing very candidly your efforts. So many things to review. Maybe we should do it more often on just a regular nonbudget basis where we might have a hearing. I am going to suggest we do that because there are so many things, so many refinements to be made, so many updates that we can look at, licensing reform, we will work into some of that. Emergency planning, we are never going to know how well we did until, God forbid, something will happen again and then we better have all done our work as best we can on emergency planning. That is not to be dramatic, but it is the toughest area. You can't get people convinced of reality. Often what appears good in concept doesn't work in reality. I could go on.

I want to share with you that I will be looking forward to inquiring—and I think we will have a separate time on this—into the implementation of the Nuclear Waste Policy Act, the most significant thing we have done around here in Congress in some 30-plus years and it came through the lameduck session. We will be asking you about guidelines and draft guidelines, and I really want to pursue those on a responsible basis with you, but I can't do it today.

Let me say Senator Hart, the ranking member of this subcommittee, will have several questions to submit to you in writing, and would appreciate your response to them as soon as possible.

I thank Jim Curtiss, the chief counsel, staff director, and man of all trades of this subcommittee, the successor to your colleague here. I thank Keith Glaser and Anita Ruud for their assistance.

Let me just again thank you and tell you that I think that the American people really expect great results from you, and I hope you will provide that for them. They also expect it of us, and we don't always provide that for them. But maybe we can all just continue to sincerely try to do that. Thank you, gentlemen, and all.

That concludes the hearing.

[Whereupon, at 4:05 p.m., the subcommittee recessed, to reconvene subject to call of the Chair.]

[Responses to written questions follow:]

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

March 10, 1983

The Honorable Alan Simpson, Chairman
Subcommittee on Nuclear Regulation
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

Attached are responses to the questions transmitted by your letter of March 3, 1983, regarding the Nuclear Regulatory Commission's budget request for fiscal years 1984 and 1985.

Sincerely,

Edward Foy

Carlton Kammerer, Director
Office of Congressional Affairs

Attachment:
As stated

cc: Sen. Gary Hart

QUESTION 1. Please provide a detailed section-by-section status report on all actions taken by the NRC to implement Public Law 97-415, "Nuclear Regulatory Commission Authorization for Fiscal Years 1982 and 1983."

ANSWER

Sec. 1.(C) Reprogramming.

NRC sent a letter to Congress on February 3, 1983 describing proposed reprogramming actions as well as other funding charges. The requested reprogramming consisted of funding for additional FY 1983 pay costs, analyses in the regulatory process (see Enclosure 1).

Sec. 2. Authority to retain certain amounts.

In 1976, the NRC established a special deposit fund account at Treasury for the cooperative nuclear research program. This same account will be used to deposit fees collected from licensees for personnel security clearances required by the NRC Material Access Authorization Program.

Sec. 6 Nuclear Safety Goals

The Commission has developed over the period 1980-82 a policy statement which sets forth safety goals and a plan for evaluating the appropriateness of the goals. The goals and the plan will be published in the March 14, 1983 Federal Register. A revised Commission document (NUREG-0880), which discusses the basis for the goals in more detail than the policy statement, will also be published shortly.

Sec. 7 Loss-of-Fluid Test Facility

On November 22, 1982, the Chairman sent a letter to Congress describing the redirection of the LOFT facility, turning the facility over to DOE to be funded by an international consortium with participation by NRC. The requirement in the Authorization Bill for a detailed technical review and analysis of research results of the LOFT program has been contracted to INEL. The output of this research project will be closely coupled to justification of the revision of Appendix K.

Question 1.

Sec. 8. Nuclear Data Link

The Nuclear Data Link related issues raised by the Congress in P.L. 97-415 are continuing to receive Commission attention. With respect to NRC's role during emergencies, for example, the Nuclear Regulatory Commission has recently completed critical components of its emergency response documentation. In January 1983, the Commission approved Manual Chapter 0502, the NRC Incident Response Plan, which is a modification of NUREG-0728, Report To Congress, The NRC Incident Response Plan, sent to Congress in September of 1980. This is the principal policy document for NRC emergency response. The Agency role in reactor incidents, summarized here and delineated in detail in Manual Chapter 0502, is to:

1. Monitor licensee information to understand the conditions of the facility and its environs to assure appropriate off-site recommendations are made.
2. Support the licensee.
3. Support offsite authorities, including confirming the licensee's recommendation to offsite authorities.
4. Keep other Federal agencies and entities informed of the status of the incident, including coordination with other public affairs groups.

The Congressional questions that remain unanswered include the specific information that the NRC must have to fulfill its role and the best way to obtain it. The NDL Prototype Program has been planned specifically to address those remaining questions, with licensee and State participation in the process. The Commission has recently approved a staff recommendation to issue a Request for Proposals to select a contractor to carry out the prototype program. A letter informing the Congress of this action and summarizing staff progress on the NDL issues is expected to be forwarded within the next few weeks.

If the results of the prototype program favor a data link and the Commission agrees, the program results and proposed Commission actions would be presented to the Congress for a 60-day review, as provided in P.L. 97-415, before any steps are taken toward implementing a system.

Sec. 10. Three Mile Island

The NRC's 1982 Annual Report is currently in the final stages of publication. It will include as Chapter 3 a description of the collaborative efforts undertaken - or proposed to be undertaken - by NRC and DOE with respect to the decontamination, cleanup, repair or rehabilitation of facilities at Three Mile Island Unit 2. A final draft is attached as Enclosure 2.

Question 1.

Sec. 11. Temporary Operating Licenses

The staff has developed proposed amendments to its regulations in 10 CFR Parts 2 and 50 to implement the temporary operating license authority. For the most part the proposed amendments are similar to those established in 1972 when Section 192 was initially added to the Atomic Energy Act of 1954, as amended. The authority under the original Section 192, of course, expired by its terms some years ago. In essence, the proposed amendments track the procedures called for in Section 192 and embody its criteria for the issuance of a temporary operating license by the Commission. The Commission expects to publish the amendments in March 1983. The authority under Section 192 by its terms has been available since its enactment in P.L. 97-415.

Sec. 12. Operating License Amendment Hearings

The staff has developed proposed amendments to its regulations to implement this authority. By the terms of this section, the Commission must promulgate regulations during a ninety-day period after January 4, 1983, the date of enactment of P.L. 97-415. The Commission expects to publish these regulations in March 1983. The regulations, consistent with the directions in Section 12, will establish: standards for determining whether any amendments for an operating license involve no significant hazards consideration; criteria for providing or dispensing with prior notice of amendments to operating licenses; and procedures for consultations on any no significant hazards consideration determination with the State in which the facility whose operating license would be amended is located.

Sec. 13. Quality Assurance

This section directs placement of inspectors at each site at which a nuclear reactor power plant under construction is greater than 15% complete. All such sites now have resident inspectors.

The section also mandates a study of existing and alternative programs for improving quality assurance and quality control in nuclear power plant construction. Such a study is underway and consists of a series of quality assurance case studies being performed at representative plants with successful programs and plants where significant quality problems have been experienced. The purpose of the case studies is (1) to determine generic root causes for the quality problems experienced by certain utilities, and (2) to determine for utilities who have not had major quality problems, the reasons or root causes for the apparent success. To date, NRC has conducted case studies at the Marble Hill and Vogtle construction sites. Project plans call for a few more of these case studies to be conducted.

A Federal Register Notice [dated 3/3/83, 48 FR 9106] was published to request public comments on the QA studies mandated by Section 13(b), (c), and (d) of the NRC Authorization Act.

Supplementing the information obtained from the case studies are several subtasks and activities which will go into selected topics in more depth. These topics include the NRC QA program, QA programs in other industries and countries, qualification requirements for QA/QC personnel, the Ford Amendment pilot program, and the contract and procurement processes. Contractor assistance is required for the supplementary studies, and the staff is in the process of scoping, preparing and

Question 1.

negotiating statements of work. In addition, the staff will obtain advice and views for a panel representing a broad spectrum of expertise in the nuclear field on the conduct and results of the study.

The Ford Amendment requires an analysis of five alternative QA/QC programs described in the language of the bill, as well as a pilot program at three sites to test one or more of the suggested alternatives. In addition, the legislation requires an analysis of QA/QC programs at representative sites. The staff is in the process of identifying QA programs and plants for participation in the pilot program and/or representative site analysis.

Sec. 15. Resident Inspectors

The required study is in process and it could be ready for submittal to the Commission in early April 1983. However, because GAO will be issuing a report on this topic in the near future, the staff intends to request the Commission to ask Congress for authorization to delay submission of the report until the NRC has had an opportunity to consider the GAO report.

Sec. 18. Establishes new deadlines for promulgation by EPA of general environmental standards.

A task force was established to review the NRC mill tailings regulations and consider options for change if any are indicated. The task force is proceeding on the assumption that EPA will promulgate standards on schedule. It will provide comments on the EPA standards, recommend portions of NRC regulations for suspension and recommend actions to conform NRC regulations to EPA standards.

EPA's current schedule is to publish proposed active site standards in early April, 1983. Ninety days later NRC will take action to suspend selected portions of the regulations. Assuming EPA publishes final standards by September 30, 1983, NRC's rulemaking will be complete by March 31, 1984.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICE OF THE
CHAIRMAN

Encl 1

February 3, 1983

The Honorable Alan Simpson, Chairman
Subcommittee on Nuclear Regulation
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

The Nuclear Regulatory Commission (NRC) is requesting approval to reprogram a portion of its FY 1983 available funds to compensate for Federal employees' 1982 pay raises and to increase NRC's efforts in quality assurance and the use of cost benefit analysis in the regulatory process. The proposed reprogramming adjustments with explanations are detailed in the enclosure.

The enclosure will also serve as the initial and first quarter FY 1983 Base Table Reports and, as such, identifies the $17 million appropriation reductions that are necessary until an FY 1983 appropriation is enacted.

Your early consideration of the proposed reprogramming actions is appreciated.

Sincerely,

Nunzio Palladino

Nunzio J. Palladino
Chairman

Enclosure:
As stated

cc: Sen. Gary Hart

QUESTION 1.

ENCLOSURE

U.S. NRC
FY 1983 REPROGRAMMING AND OTHER CHANGES
($ in Thousands)

Program	FY 1983 President's Budget	Change[1]	Appro. P.L. 97-377	Proposed Reprog. [2]	Other Changes[2]	Revised FY 1983 Budget
NRR	$93,120	$-3,700	$ 89,420	$+1,540	$ +3,420	$94,380
IE	69,850	-896	68,954	+2,545	-2,219	69,280
NMSS	37,385	-1,330	36,055	-180	-225	35,650
RES	219,725	-10,110	209,615	+170	-285	209,500
PTS	23,400	-450	22,950	+855	+3,245	27,050
PDA	36,020	-510	35,510	+2,420	+1,480	39,410
Total	$479,500	$-16,996	$462,504	$+7,350	$ +5,416	$475,270

[1] This is the result of the enactment of the Continuing Resolution which provides NRC funding at the "current rate" which is $471,800,000 less the FY 1982 unobligated balance carryover of $9,296,000 for a net of $462,504,000 in new obligational authority. This is $16,996,000 below the President's budget request of $479,500,000. These reductions will be necessary until an appropriation is enacted.

[2] These are discussed in detail on the following pages.

QUESTION 1.

U.S. NRC
FY 1983 REPROGRAMMING CHANGES
($ in thousands)

Program	Pay Shortfall	Quality Assurance	Cost Benefit Analysis	Const. & Vendor	Waste Mgt.	Other	Total
NRR	$+1,710					$-170	$+1,540
IE	+1,995	$+550					+2,545
NMSS	+720				$-900		-180
RES	+630				-460		+170
PTS	+715			$+230		-90	+855
PDA	+1,580		$+1,000			-160	+2,420
Total	$+7,350	$+550	$+1,000	$+230	$-1,360	$-420	$+7,350
Unob. Carryover	$-7,350						$-7,350

Pay Shortfall

Effective January 1, 1982, the Congress raised the pay cap from $50,112 to $57,500 for non SES personnel and to $58,500 for SES personnel. These increases were not included in the FY 1983 President's Budget. In addition, the NRC was allowed to include in the FY 1983 pay raise supplemental only one half of the cost of the October 1, 1982 4% pay increase and one half of the government share of the 1.3% medicare tax levied on all government employees effective January 1, 1983. The total for last year's pay cap increase and one half of last October's pay increase and the medicare tax is estimated to cost the NRC $7,350,000. It should be noted that the cost of the December 18, 1982 pay cap increase is not funded in this reprogramming action and that a subsequent reprogramming request will be necessary if not provided by a supplemental.

Quality Assurance Program

Within the Inspection and Enforcement program Quality Assurance (QA) activities are being increased. Funding is required for technical assistance in support of construction assessment teams; integrated design inspections; management and quality improvement programs; and the long term QA study.

Cost Benefit Analysis Function

In the development of NRC's FY 1984 budget, the Commission decided to place more emphasis on the use of cost benefit analysis in the process of establishing new rules and regulations. The House Appropriations Committee, in their report on NRC's FY 1983 Appropriations, has also stressed the need for cost benefit analysis. To initiate this program in FY 1983, it is estimated that $1,000,000 would be needed in contractual assistance to complement the efforts of a small in-house staff in the Office of Resource Management.

Construction and Vendor Data Base Program

This program would allow the NRC to extract data from reports provided by the nuclear industry, analyze the data and enter it into a central data base that provides a capability to match and compare like occurrences at different facilities. This effort will be performed by the Office of Analysis and Evaluation of Operating Data and will complement the QA efforts by IE.

Waste Management

These reductions were the result of increased use of DOE data and refined estimates of FY 1983 program requirements.

Other

These minor reductions were primarily the result of updated estimates of contract requirements.

QUESTION 1.

U.S. NRC
FY 1983 "OTHER" CHANGES
($ in thousands)

Program	Pay Raise Supplemental	Prior Year Commitments	Programmatic Transfers	Rate & Staff Changes	Total
NRR	$+860	$ +20		$+2,540	$+3,420
IE	+960	+1,536	$+300	-5,015	-2,219
NMSS	+310	+150		-685	-225
RES	+320	+240	-300	-545	-285
PTS	+400			+2,845	+3,245
PDA	+620			+860	+1,480
Total	$+3,470	$+1,946	-0-	-0-	$+5,416
Unob. Carryover		$-1,946			$-1,946

FY 1983 Pay Raise Supplemental

The requested FY 1983 pay raise supplemental for the NRC amounts to $3,470,000 and as stated earlier, represents one half of our total requirement for the October 1, 1982 pay increase and the government's share of the medicare tax imposed on January 1, 1983.

Prior Year Commitments

As in past years, we have provided the Congress in the Quarterly Base Table report the use of prior year unobligated carry-over funds, to fund prior year commitments, which due to delays in contracting, were unable to become obligations in the prior year.

Programmatic Transfers

In consonance with increased emphasis on QA, this effort has been consolidated within the Inspection and Enforcement program. As a result, $300,000 in contractual support has been transferred from RES to IE.

QUESTION 1.

Rate and Staff Changes

Previous Quarterly Base Table reports, identified funding changes resulting from rate changes in the allocation of salaries and benefits and administrative support.

At the time the budget is formulated, salaries and benefits are allocated to each program based on the most current actual average salary rates for the staff within the program. Portions of administrative support costs are assigned directly to the applicable program, (i.e., ADP costs directly related to a specific program) with the remainder allocated to programs based on a rate per staff year. The following year, when the next year's budget is formulated, actual salary rates have changed and the estimates for the direct allocation of administrative support costs are more refined. Therefore, to make the "current year" column of the budget on a comparable basis with the "budget year," the rate change adjustments are made.

Also, staff changes which have taken place in the past year require a reallocation of salaries and benefits and administrative support. NRC has reorganized its investigations function and established a new Office of Investigations (OI). Funding for OI is now shown in the Program Technical Support line. Formerly, investigations were a part of the Inspection and Enforcement program. Also, as announced previously, NRC established the Deputy Executive Director for Regional Operations and Generic Requirements. This is shown in the Program and Direction and Administration line and the staff years were allocated from the Inspection and Enforcement program. The licensing boards and panels were increased due to the licensing hearing workload and were allocated from the Research program.

QUESTION 1.

CHAPTER 3: CLEANUP AT THREE MILE ISLAND UNIT 2

At the close of the report period, i.e., the end of September 1982, conditions at the Three Mile Island Nuclear Power Station (TMI) near Harrisburg Pa., were stable and the cleanup of the damaged Unit 2 was proceeding. The pace of progress in decontaminating the plant and removing the damaged reactor fuel was less than hoped for during 1982. NRC Chairman Nunzio J. Palladino made repeated allusion to the situation at TMI in various public statements during the year. The Chairman deplored the "disturbingly slow pace of the project" and the "prospect that funds may run down or run out before the job is done." Some aspects of the future of the cleanup campaign became clearer during the period, such as the agreement by the Department of Energy to take custody of the entire core of TMI-2 when that becomes possible. But other uncertainties persist, both fiscal and technical, and costs continue to mount. (See discussion below.)

Meanwhile the Commission set forth explicit positions and intentions regarding TMI in its annual policy and planning guidance for the NRC staff. In this document, the Commission affirms that the "expeditious cleanup" of the Unit 2 containment and reactor is "one of the NRC's highest safety priorities." The NRC's TMI Program Office will continue to monitor cleanup activities from the actual TMI site, and the NRC will generally provide oversight, support and, if necessary, direction to ensure the prompt decontamination of the facility and the safe removal of radioactive materials from the site. The licensee will be directed to submit updated plans and schedules for cleanup activities in 1983 and these will be reviewed by NRC staff, who will report on them, with recommendations, to the Commission within three months of licensee submittal.

CLEANUP ACTIVITY

Memorandum of Understanding

In July 1981, the Nuclear Regulatory Commission and the Department of Energy (DOE) signed a Memorandum of Understanding (MOU) that formalized the working relationship between the two agencies with respect to removal and disposal of solid nuclear waste from Three Mile Island Unit 2 (TMI-2), which was damaged in the accident of March 1979. This was a significant step towards ensuring that the TMI site would not be permitted to become a long-term waste disposal facility.

Besides working closely with the NRC, the DOE agreed to carry out research and development and to conduct tests on solid wastes taken from the plant whenever DOE determines that they may have generic-information value. With costs reimbursable by General Public Utilities Nuclear, the operator of TMI-2, the DOE may also assume responsibility for removal, storage, and disposal of other wastes that are too highly radioactive for disposal in commercial facilities. Low specific- activity wastes associated with decontamination (such as some ion-exchange media, boots, gloves, and trash) will be disposed of by the utility in licensed commercial low-level burial facilities.

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In March 1982, the NRC and the DOE agreed to a revision of the MOU. Instead of taking only samples of the damaged fuel of TMI-2, the DOE agreed to accept the entire core for research and development and for storage at a DOE facility. The terms of ultimate disposal of the core will be negotiated between DOE and the utility operating the TMI facility. The DOE also agreed to take possession of highly radioactive resins from the purification system, again on the basis of future reimbursement by the utility.

The DOE also plans to take possession of zeolite wastes from the submerged demineralizer system and retain them for research and testing with regard to waste immobilization. Experiments are being conducted by DOE on several of the 49 high-specific-activity resin liners from the EPICOR-II system for decontaminating water, and this program may be extended to include other liners as well. An alternative approach being investigated by DOE is the development of a high-integrity container, which may allow these liners to be acceptable for commercial burial. Waste contaminated with transuranic elements at levels of radioactivity comparable with those acceptable for commercial disposal will be considered by the DOE on a case-by-case basis for possible use in research, archiving, temporary on-site storage, or disposal in a permanent repository off-site.

Status of Cooperative Efforts

On May 21, 1982, the first waste vessel from the submerged demineralizer system was shipped from TMI to DOE facilities at Hanford, Wash., for disposal. This vessel was used to process waste water from the reactor-coolant bleed tanks and contained approximately 12,000 curies of radioactive material on zeolite ion-exchange media. Subsequent shipments will include liners containing more than 50,000 curies of radioactive material removed from reactor-building sump water. The DOE will be conducting research on glass vitrification (solidification) of this type of solid waste at Hanford.

On July 27, 1982, one of the 49 high specific-activity EPICOR-II liners stored on-site was sampled for gas composition at TMI and was shipped on August 17 to the Battelle Columbus Laboratories in West Jefferson, Ohio, for radiation and chemical characterization tests. The liner contained approximately 1,800 curies of radioactive material and was shipped in a special cask designed to withstand severe transportation accidents. On August 25, a second liner was shipped from TMI to the Idaho National Engineering Laboratory in Scoville, Ida., for characterization tests. Eleven more shipments of these liners from TMI by the end of calendar year 1982 have been tentatively scheduled by the utility.

Cleanup of Cooling Water

The reactor coolant system of TMI-2 remained in the loss-to-ambient cooling mode during fiscal year 1982, and this mode was found to be reliable and adequate for the present level of decay heat, which is approximately 30 kilowatts. On flush water), 277,000 gallons of water from the reactor-coolant bleed tanks, and 250,000 gallons of water from the reactor coolant system.

Groundwater Monitoring Program

On January 13, 1982, a leak was discovered in a 3/8-inch instrument line connected to the borated water storage tank. In February, the groundwater monitoring program found that samples of several test borings indicated increased tritium levels, but they were still below the maximum permissible concentration for unrestricted areas. Increased surveillance indicated that the source of radioactivity in the groundwater on the TMI-2 site was probably from the borated water storage tank. Staff of the NRC located at the site and utility staff have continued to follow the results of the groundwater monitoring program

Reactor Building Entries

During fiscal year 1982, workers entered the TMI-2 reactor building 73 times. Their activities continued to focus on gathering post-accident data, decontamination efforts, and equipment refurbishment.

In March 1982, a large-scale decontamination experiment was initiated. One objective was to evaluate the safety, effectiveness,and efficiency of various methods and equipment for performing large-scale decontamination of extensive, complex, contaminated surfaces within the reactor building. The other objective was to reduce the contamination present on selected surfaces within the reactor building. Post-experiment surveys indicated that decontamination of loose material could be achieved by using both low-pressure and high-pressure water sprays and various mechanical and chemical techniques. But fixed sources of radiation, which are the apparent cause of exposure to gamma rays, were evidently not decontaminated by methods tried. Further efforts will be required to decontaminate the reactor building.

The polar crane in the reactor building, which will be needed to remove the reactor vessel head and plenum, was inspected during the report period. No structural damage of the crane was observed, but it is anticipated that replacement of all electrical cables, control components, and brake shoes -- and the addition of a pendant control -- will be required.

During reactor-building entries in August 1982, attempts were made to uncouple the leadscrews from all 61 control rods and the eight axial power-shaping rods. Uncoupling of the leadscrews is a prerequisite to removal of the reactor vessel head. The uncoupling was successful in all but three cases, where the leadscrews will probably have to be cut to disconnect them from the reactor vessel head.

QUESTION 1.

Inspection of the Reactor Core

The first closed-circuit television inspection of the reactor core was performed on July 21, 1982. A camera 1-1/4 inches in diameter and 12 inches long was inserted through the central control-rod guide tube As the camera was lowered into the core region, it revealed a bed of rubble approximately five feet below the normal location of the top of the fuel assembly. It is believed that the rubble bed contains oxidized Zircaloy cladding, fuel fragments and/or pellets, poison material, and core structural components. No evidence of melted uranium-oxide fuel pellets was found. Another inspection, on August 4, midway between the periphery and the center of the core also revealed a rubble bed approximately five feet below the top of the core region. Intact pellets, which may be fuel or poison material, were visible on the top of the rubble. During a third inspection, which took place on August 12, a probe was poked through the rubble and it penetrated approximately one foot below the surface, indicating that the rubble in this region is composed of loose material.

Advisory Panel on TMI Cleanup

An Advisory Panel for the Decontamination of Three Mile Island Unit 2 was formed by the NRC in October 1980 to provide advice on major stages of the cleanup. The 12 members of the panel include local citizens, local and state government officials, and scientists (see Appendix Two for list of members). The Panel held several open meetings during fiscal year 1982 and members of the general public were invited to express their views. The NRC has asked the panel to address the issue of final disposition of treated water from the accident.

FINANCIAL ASPECTS OF CLEANUP

Funding by GPU

As reported in the 1981 NRC Annual Report, there are several actual or potential sources of funds available to the TMI licensee for the cleanup of Unit 2. As of late August 1982, approximately $54 million of unused insurance proceeds remained to meet cleanup funding. Based upon the pace of cleanup activity, it was projected that $40 million would remain at the end of 1982. As a result, depending on the range of funding available from other sources, insurance will run out in 1984-1985. The second source, approved during 1982, is revenue allowed through rates set by the Pennsylvania Public Utility Commission (PaPUC) and the New Jersey Board of Public Utilities (NJBPU). The licensee has announced its intention to seek increases in the Pennsylvania cleanup allowances in January 1983 to $25 million for one of its companies in Pennsylvania and $12.5 million for the other. A third source is short-term credit under a revolving credit agreement with a consortium of banks. Since the licensee and its subsidiaries continue to be unable to issue any stocks or bonds, bank credit constitutes its only outside source of credit. However, amounts available from this source of funds have become increasingly limited and are dependent upon progress in other developments affecting the companies. The licensee has announced its intention to seek a renewal of the credit agreement for 1983.

QUESTION 1.

Proposals for Sharing Costs

The plan for cleanup financing proposed by Pennsylvania Governor Richard Thornburgh (see 1981 NRC Annual Report, p. 43) is a proposal for sharing of cleanup costs among industry, the Federal Government, the TME licensee, property insurers, the State of Pennsylvania, and the State of New Jersey.

The Federal Government is committed, through the Department of Energy, to accepting TMI's high-level waste for permanent disposal and to funding research at TMI-2 in the amount of $123 million, an estimated $69 million of which will directly offset cleanup costs. The agreement between DOE and the licensee provides for future negotiation of reimbursement to DOE of costs that are not attributable to research and development.

Several bills were considered in Congress during 1982 that would provide funding by the utility industry of a portion of cleanup costs, but none has been enacted. There is some prospect, however, for voluntary contributions by the utility industry, apart from any legislative mandate.

The State of Pennsylvania recently appropriated $5 million as the first of six annual installments on the State' contribution to TMI-2 cleanup, in accordance with the Thornburgh Plan. There is some prospect that New Jersey will include some cleanup funds in a supplemental appropriations bill. The NRC is continually monitoring the financial condition of the licensee's companies.

QUESTION 2. Please provide a detailed section-by-section status report on all actions taken by the NRC to implement Public Law 97-425, "Nuclear Waste Policy Act of 1982".

ANSWER.

In the two months since the President signed the Nuclear Waste Policy Act (NWPA) into law, the Commission's staff has put a great deal of effort into preparing the plans and schedules needed for the Act's timely implementation, and in those few instances where near-term actions are required, taking the steps necessary tn ensure their timely completion. It should be noted from the start that the vast majority of actions required under the Act are to be performed by the Department of Energy, and the Commission's statutory role is to provide an independent determination that DOE's execution of their responsibilities is performed so as to protect the public health and safety and the environment. The direct consequence of this relationship is that NRC must, for the most part, develop its plans to be responsive to DOE's lead, and must, therefore, tailor its programs to DOE's plans and schedules. For this reason, one of the first actions taken by the NRC to implement the NWPA was to develop close communication with DOE's planning staff so that both Agency's required activities and lead times could be identified and accounted for early in the planning process.

In the detailed section-by-section status report that follows we have identified what has been done to date by the NRC to implement either the short-term or the independent NRC actions required by the NWPA. For the majority of the provisions which include NRC participation, we are now performing the planning that will guide future NRC NWPA actions.

ATTACHMENT QUESTION #2.

NRC ROLE UNDER THE NUCLEAR WASTE POLICY ACT OF 1982 AND ALL ACTIONS THAT HAVE BEEN TAKEN

(All dates specified by the act are keyed to enactment date of January 7, 1983. Dates in parenthesis represent one year extensions permitted by Act.)

I. NRC's Role In Repository Development Program

	Provision	Specific Dates	NRC Role
1.	Siting Guidelines promulgated by DOE in which NRC concurs. Section 112(a).	7/6/83	NRC must concur in the DOE siting guidelines. Actions That Have Been Taken By NRC On February 14, 1983, DOE issued draft guidelines for public review and comment, and has published the schedule for public meetings. NRC and DOE have developed a detailed schedule for completing this action. Our technical staff is now reviewing the draft guidelines and anticipates providing comments to DOE by April 7, 1983.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role
2.	NRC technical requirements and criteria promulgated. Section 121(b).	1/1/84	NRC must issue regulations which specify the technical requirements and criteria for the repository. Actions That Have Been Taken By NRC These regulations, which have been under development by the staff for several years, have recently been submitted to the Commission for final approval and promulgation as an effective rule.
3.	EPA final high-level waste standards promulgated. Section 121(a)	1/7/84	NRC intends to comment on the draft EPA standards.
4.	Conform NRC requirements and criteria to EPA final high-level waste standards. Section 121(b)(2).	After Event 3	Depending on contents of the final EPA standard, action may may be necessary by NRC to conform NRC regulations.
5.	DOE Project Decision Schedule. Section 114(e)	None specified	NRC must coordinate with DOE on the development of the Project Decision Schedule.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role
6.	Draft Mission Plan published by DOE for comments of NRC and others. Section 301(b).	4/7/84	NRC must coordinate with DOE on the development of DOE Mission Plan. And specify, with precision, any objections to the Plan.
7.	Submission by DOE of Mission Plan to Congress. Section 301(b).	6/7/84	Following approval of the Mission Plan by Congress, NRC will, wherever necessary, conform its waste management program planning guidance to the Plan.
8.	DOE recommends to the President 3 sites for characterization for first repository. Each of the initial 5 sites nominated by DOE prior to recommendation to President will be accompanied by an environmental assessment (EA). Section 112(b).	1/1/85	NRC staff intends to review and comment on EA's.
9.	President must evaluate the possibility of developing a repository to dispose of defense waste only. Section 8.	1/7/85	If decision is to not include defense waste in the civilian repository NRC licensing of a separate defense waste only repository is required.

ATTACHMENT QUESTION #2.

Provision	Specific Dates	NRC Role
10. Submission by DOE of site characterization plan , waste form or package description, and conceptual repository design to NRC for review and comment. Section 113(b).	Before sinking a shaft	NRC will review & comment on DOE submission of each site to be characterized.
11. DOE submits to the President and the public the Commission's preliminary comments concerning at-depth site characterization and waste form sufficiency for DOE construction authorization application. Section 114(a)(1)(E).	Before event 13 below	NRC must provide preliminary comments on the adequacy of the at-depth site characterization and waste form sufficiency for DOE construction authorization application.
12. The Doe Final Environmental Impact Statement (EIS) on the first proposed repository must contain comments from the NRC concerning the DOE draft EIS. Section 114(a)(1)(D).	Before event 13 below	NRC will review and comment on the DOE draft EIS.
13. President recommends one site to Congress for construction. Section 114(a)(2)	3/31/87 (3/31/88)	None; see 15 below
14. Submission of notice of disapproval by State, Section 116(b); or Indian tribe, Section 118(a)	5/30/87 (5/30/88)	None; see 15 below
15. Congress may obtain any comments of the Commission with respect to a State/tribal disapproval of a site. Section 115(g).	Before event 15 below	The NRC must be cognizant of State/tribal concerns to be in a position to provide knowledgeable comments to Congress.
16. State disapproval will take effect unless both Houses of Congress pass resolution of approval. (90 calendar days of continuous session.) Section 115(c).	About 8/87 (About 8/88)	None; see above.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role
17.	Within 1 year after site disapproval, the President must recommend an alternative site for the first or a subsequent repository. Section 114(a)(3).	About 8/88 (About 8/89)	Role similar to initial site recommendation. See events 11-15, above.
18.	Secretary submits construction authorization application to NRC. Section 114(b).	About 11/87 (About 11/88)	An NRC licensing proceeding will be initiated on the construction authorization application.
19.	NRC must submit to Congress an annual status report. Section 114(c).	One year after submittal of CA and annually thereafter.	NRC will submit an annual status report on the progress of the licensing proceeding to Congress.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role
20.	Commission must issue decision on issuing construction authorization for first repository. Section 114(d)	1/1/89 or 11/90 or 11/91	3 year time period for NRC decision dictates an active program of involvement with DOE, States/tribes prior to receipt of application to identify and resolve contentious issues to the maximum extent practicable. Commission will either grant or deny authorization for DOE to begin construction of the 1st geologic repository. To meet this schedule, a relatively complete, good quality DOE application will be required.
21.	Secretary must recommend 3 sites for characterization to President for second repository site. Section 112 (b)(1)(C).	7/1/89	Same as event 8 above.
22.	President must recommend to Congress 1 site, from sites already characterized, for second repository. Section 114(a)(2)(A).	3/31/90 (3/31/91)	Same as events 10, 11 and 12, above.
23.	Submission of Construction authorization application to NRC for second repository. Section 114(a)(2).	About 11/90	NRC will initiate licensing proceeding for second repository.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role
24.	Commission must issue decisions on issuing construction authorization for second repository. Section 114(d)	1/1/92 or 11/93 or 11/94	3 year time period for NRC decision dictates an active program of involvement with DOE, States/tribes prior to receipt of application to identify and resolve contentious issues to the maximum extent practicable. To meet this schedule, a relatively complete, good quality DOE application will be required.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role
	II. NRC's Role In The Test and Evaluation Facility Program		
1.	DOE may issue T&E facility siting guidelines Section 213(a)	7/7/83	NRC will provide consultation to DOE on its T&E siting guidelines.
2.	NRC, DOE must conclude written agreement on procedures for T&E facility interaction Section 217(f)(1)	1/6/84	NRC must work with DOE in developing a written agreement for procedures for review, consultation, and coordination in the planning, construction and operation of the T&E facility. Such an understanding shall also establish the types reports and other information as the Commission may reasonably require to evaluate health and safety impacts of the T&E facility.
3.	NRC shall carry out a continuing analysis of the T&E activities to evaluate the adequacy of the consideration of public health and safety issues. Section 217(f)(3)(A).	None specified	NRC will carry out a continuing analysis of the activities associated with the DOE T&E facility.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role
4.	NRC required to report to the Secretary, the President, and the Congress Section 217(f)(3)(B).	As Required	NRC will report to the President, the Secretary, and the Congress as it deems appropriate pursuant to the Act.
5.	NRC must concur on decontamination and decommissioning of DOE's T&E facility Section 217(h)	5 Years After Initial Operation	NRC will evaluate DOE's decontamination and decommissioning activities, and concur, if deemed appropriate for a T&E facility not located at the site of a repository.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role
	III. NRC's Role for Interim Spent Fuel Storage		
1.	The Secretary, the Commission, and other authorized federal officials shall each take such actions as such officials consider necessary to encourage and expedite the effective use of available storage, and necessary additional storage, at the site of each civilian nuclear power reactor. Section 132.	No specific dates	The Commission will consider which actions are necessary to implement the intent of this provision.
2.	Hybrid procedures are prescribed for hearings on certain applications for licenses for facility expansions of spent fuel storage capacity and transshipments of spent fuel. Section 134.	Not specific but applicable to applications filed after 1/07/83.	Actions That Have Been Taken By NRC NRC is in the process of developing procedures for such a Hybrid hearing.
3.	Issuance of NRC proposed rule establishing procedures and criteria for making the determination that onsite storage cannot reasonably be provided at a reactor and that the person owning and operating the reactor is diligently pursuing licensed alternatives to the use of Federal storage capacity. Section 135(b) and Section 135(g).	4/07/83	NRC will issue a proposed rule establishing procedures and criteria for determining use of Federal storage capacity. (After public comment NRC will issue a final rule.) Actions That Have Been Taken By NRC NRC staff is preparing the proposed rule to be issued by April 7, 1983. This activity is on schedule.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role
4.	If the NRC determines that onsite storage cannot reasonably be provided at a reactor by the licensee DOE may, under certain conditions, provide not more than 1900 metric tons of capacity for storage of spent nuclear fuel from civilian power reactors. Section 135(a)	Not specific	NRC will make public health and safety determinations as to the use of any existing DOE facility for spent fuel storage and will license storage in new structures, including modular or mobile spent nuclear fuel storage equipment such as dry casks, as required under this provision of the Act.
5.	Transportation of spent nuclear fuel to a DOE storage facility shall be subject to licensing and regulation by NRC and by the Department of Transportation. Section 137(a).	Not specific	NRC is required to review DOE's applications for shipment and make licensing determinations for health and safety and safeguards.
6.	DOE, in providing for the transportation of spent nuclear fuel under this Act, shall utilize by contract private industry to the fullest extent possible in each aspect of such transportation. Section 137(b)	Not specific	NRC will be required to review the private contractor's application for shipment, and make licensing decisions for health and safety and safeguards. Regulations may, at a future date be modified or revised, to conform with DOE's repository program.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role
7.	NRC shall, by rule, establish procedures for the any technology approved by the by NRC under Section 218(a) for use at the site of any civilian nuclear power reactor. [Section 133.] Error exists in Act where reference is made in Section 133 to Section 219(a). Under Section 218(a), NRC may, by rule, approve one or more dry storage spent fuel storage technologies for use at the sites of civilian nuclear power reactors, without to the maximum extent practicable, the need for additional site-specific approvals.	Not specific	NRC, using data and information licensing from DOE dry storage demonstration and cooperative programs, will develop regulations to approve dry technology storage at civilian nuclear power reactors without, to the maximum extent practicable, the need for additional site specific approvals by the NRC.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role
IV.	NRC's Role In Monitored Retrievable Storage Program		
1.	DOE shall consult with the Commission and EPA and shall submit their comments on the MRS proposal to Congress. Section 141(b)(3).	06/01/85	NRC will consult with DOE on development of the MRS proposal, and provide comments to DOE for submittal of the proposal to Congress.
2.	Submission by Secretary of an environmental assessment with respect to the MRS proposal to Congress. Section 141(c)(1).	06/01/85	NRC may, if it deems appropriate, comments to DOE on this environmental impact assessment (EA).
3.	DOE shall file for license with NRC for MRS. Section 141(d).	Subject to Congressional authorization of MRS.	NRC will develop amendments to 10 CFR Part 72 to provide the licensing framework for the MRS, if it should be authorized by Congress. If authorized NRC will review DOE's application and make the necessary licensing determinations.

ATTACHMENT QUESTION #2.

V. NRC's Role In The Low-Level Waste Management Area

(No deadlines were provided in the Act for the LLW management provisions under Section 151.)

Provision	Specific Dates	NRC Role
1. Commission authorized to establish by rule, regulation, or order such standards and instructions as it deems necessary or desirable to ensure that each LLW disposal licensee will have adequate financial arrangements for decontamination, decommissioning, site closure and reclamation of sites, structures, and equipment used in conjunction with its LLW disposal. Section 151(a)(1).		New sites are covered by existing regulations (10CFR61). NRC will review existing regulations and guidance for application at the existing commercial LLW disposal sites and for any need changes for new sites.
2. If Commission determines that long-term maintenance or monitoring will be necessary at a LLW disposal site, Commission must ensure before termination of the license that the licensee has made adequate financial arrangements to ensure that any needed long-term maintenance or monitoring will be carried out by the person having title and custody for such site following license termination. Section 151(a)(2).		May require rulemaking by the Commission and the development of guidance for both existing and new commercial LLW disposal sites. For existing sites, analyses will be required to assess long term performance; monitoring and long term maintenance requirements; associated costs; and the program to review monitoring data to identify the need for mitigative actions.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role
3.	DOE shall have the authority to assume title and custody of LLW and the land on which such waste is disposed of, upon the request of the owner of such waste and land following termination of the license issued by the Commision for such disposal, if (1) the Commission determines that the requirements for site closure, decommissiong and decontamination have been met with pursuant to Section 151(a); (2) that such title and custody will be transferred to the DOE without cost to the Federal government; and that Federal ownership and management is necessary, or desirable to protect the public health and safety. Section 151(b).		Likely to require rulemaking/guidance to provide basis for required Commission determinations. Such rulemaking/guidance would require close coordination of DOE who appears to have independent discretion to accept sites following Commission determination.
4.	Adequate financial arrangements for long-term maintenance and monitoring, as well as decontamination and stabilization of special sites must be met in accordance with requirements established by the Commission before DOE may assume title and custody of the waste and the land on which it is disposed. Section 151(c).		Similiar to event 3, above.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role
IV.	NRC's Role Relating to Other Provisions In The Act		
1.	Within 90 days of the enactment of the Act, DOE and NRC must publish a joint notice in the Federal Register stating that the U.S. is prepared to cooperate and provide technical assistance to non-nuclear weapon states. This joint notice is to be updated and reissued annually for 5 succeeding years. Section 223(b).	4/7/83	NRC will prepare a joint Federal Register notice and will provide technical assistance to non-nuclear weapon states pursuant to the Act and the FR notice. Actions That Have Been Taken By NRC The staff have prepared a proposed FR notice, coordinated it with DOE, and have forwarded it to the Commission for their approval.

ATTACHMENT QUESTION #2.

	Provision	Specific Dates	NRC Role Actions That Have Been Taken By NRC
2.	The Commission shall not issue or renew a license to use a utilization or production facility under Section 103 or 10~~3~~4/ of the Atomic Energy Act unless the licensee has entered into a waste disposal contract with the Secretary of Energy or he affirms in writing that the licensee is negotiating in good faith to enter into such a contract. The NRC in its discretionary may require as a precondition to the issuance or renewal of a reactor license that the applicant shall have entered into an agreement with DOE for the disposal of high-level waste or spent fuel that may result from such a license. Section 302(b)(1)(B).	6/30/83	The NRC and DOE are still examining what the provisions mean and how they will be applied.
3.	DOE shall consult with the Chairman of the NRC in conducting a study of alternative approaches to managing construction and operation of all civilian waste management facilities and then DOE is to report to Congress. Section 303.	1/6/84	At the invitation of the Secretary, the Chairman will consult on the "alternative approaches" study.
4.	The Act requires and authorizes NRC to promulgate regulations or other suitable Commission guidance for the training and qualifications of civilian nuclear powerplant personnel. Section 306.	1/6/84	NRC will develop and promulgate regulations or other suitable guidance for training and qualifying civilian powerplant reactor personnel required to be implemented by the Act.

QUESTION 3: In a letter from the Advisory Committee on Reactor Safeguards to William J. Dircks, dated February 15, 1983, Chairman Ray raised a number of concerns regarding the Commission's regionalization of NRC staff activities. Please provide a detailed response to each of the questions raised by Chairman Ray. In addition to the concerns raised by Chairman Ray, please respond to the following questions:

(a) What specific functions related to the regulation of operating commercial nuclear power plants does the Commission propose to transfer to the regions? Please be specific.

ANSWER.

The specific functions proposed for transfer to the regions are listed on the attached table.

QUESTION: (b) What specific functions related to the licensing of commercial nuclear power plants currently under construction does the Commission propose to transfer to the regions? Please be specific.

ANSWER.

The Commission does not propose to transfer any of the licensing functions for nuclear power plants currently under construction until after those plants have been operating for approximately 1 year. The licensing functions to be transferred to the regions are the project management functions associated with maintenance of operating licenses, not the original licensing actions. Examples of functions to be transferred are those described in the delegation memo for Fort St. Vrain, which is attached.

QUESTION: (c) Has the Commission considered alternative approaches to regionalization, including a pilot program? If so, why was the option of a pilot program not pursued?

ANSWER.

NRC's inspection and enforcement functions have been largely decentralized for many years, and as a result we have a good deal of experience with this method of management. In addition, NRC has conducted pilot programs to decentralize regulatory activities on a limited basis. Examples of such programs include selected materials licensing, reactor operator licensing, emergency planning, state liaison, and some operating reactor licensing actions. These pilot programs appear to have been successful and will continue to be evaluated.

QUESTION #3.

For example, a 2-year pilot program to decentralize selected materials licensing activities was conducted in Region III in March 1978 to March 1980. The overall experience of this pilot program has been good in that it has provided better coordination between the materials licensing staff and the regional inspectors and has provided better services to applicants and licensees. Based on this favorable experience, NRC expects that similar benefits can be achieved through further decentralization. In 1982, the licensing activities for several categories of nuclear materials licenses were transferred from headquarters to Regions I and III. In 1982, Regions II and III were delegated the authority to license reactor operators, and about 350 operating reactor licensing actions were transferred to the regions for technical review and safety evaluation. In October 1982, NRC opened a Denver Field Office in Region IV that is responsible for uranium recovery licensing. In December 1982, limited authority for certain licensing actions for the Fort St. Vrain reactor was delegated to Region IV. The progress of transfers to the regions that have been made to date reflects a carefully weighed decision to proceed with the decentralization policy in a deliberate phased manner. The more recent activities represent an expansion of NRC pilot programs and additional planning is underway to accommodate transfers of other additional regulatory activities in the future.

Commissioner Asselstine believes that there is a need for a more limited pilot program on the transfer to the regions of licensing authority for operating reactors. Under the Commission's present plan, licensing authority for 49 operating reactors would be transferred to the regions by the end of FY 1985. Commissioner Asselstine has a number of serious concerns regarding the potential adverse regulatory and resource impacts of regionalizing operating reactor licensing functions. Those concerns are described in detail in his additional views on the Commission's policy statement on regionalization. A copy of his views are attached. In addition, Commissioner Asselstine notes that the Advisory Committee on Reactor Safeguards has recently raised a number of concerns regarding regionalization. He shares many of these concerns as well. Given these two sets of concerns, Commissioner Asselstine believes that it would be prudent to restrict the transfer of operating reactor licensing functions to the regions in FY 1984 and 1985 to a much more limited number of nuclear powerplants--perhaps five. Such a pilot program would provide much of the information needed to assess the potential benefits and disadvantages of transferring these functions from NRC headquarters to the regions. He would proceed with a broader regionalization program for operating reactors only after the results of the pilot program have been evaluated and the Commission has then reached a judgment that the benefits clearly outweigh the disadvantages.

Commissioner Gilinsky agrees with Commissioner Asselstine's views on regionalization.

Commissioner Ahearne disagrees with Commissioner Asselstine. A copy of Commissioner Ahearne's views are attached.

QUESTION #3.

QUESTION: (d) On June 28, 1982, I was informed that the Commission had decided to relocate its uranium recovery licensing program to Denver, Colorado. Is that relocation now complete and, if so, is the Commission satisfied with the early results?

ANSWER.

In October 1982, NRC opened a Denver Field Office in Region IV that is responsible for uranium recovery licensing. The field office is now staffed with 2 NRC personnel and the remaining 15 people attached to this function are planning to relocate in the spring and summer months of 1983. During the staffing phase for the Denver office, uranium recovery licensing is being performed in NRC headquarters by those people who are planning to relocate in 1983. The ongoing activities in uranium recovery licensing are being performed satisfactorily.

QUESTION #3.

RESPONSE TO ACRS QUESTIONS

QUESTION 1: Basis for regionalization. The Members were unable to elicit a convincing safety-related rationale regarding the basis for the proposed expansion of regional activities and would like an opportunity to discuss this matter further to develop a better understanding of the basis for this proposed change.

ANSWER.

The proposed expansion of regional activities is one aspect of the Commission's October 1981 decision on reorganization within the NRC staff. The basis for this decision was an expectation by the Commission that management of NRC regulatory programs would be improved by the combination of actions that were directed by the Commission. The Commission's decision was intended to:

- improve its coordination of licensing, inspection and enforcement activities at each facility
- bring NRC nearer to State and local Governments and the public by formalizing the role of regional offices to represent NRC in their regions
- strengthen incident response capability by delegating certain responsibilities and authorities to the regions
- upgrade the position of the NRC Regional Director

Thus, the primary purpose of further decentralization is to improve the effectiveness and efficiency of the NRC staff in providing better service to the public and the regulated industry. While a safety-related rationale was not a separate decision criterion, we expect that expansion of regional activities will have the overall effects described above and will thereby have a positive impact on the safety of licensed plants.

QUESTION 2: How are these changes expected to impact on reactor safety? The decentralization of a competent body of technical talent may have a negative effect.

ANSWER.

We believe that decentralization activities will strengthen the safety capability of the Regional Offices while maintaining the essential technical competence of the Headquarters Offices. The regions will bring a relatively small number of headquarters staff with broad safety perspectives into daily contact with regional staff who have much better detailed knowledge of the plants and their operation. This is expected to enhance the regions' ability to respond to plant operating events, emergencies, and licensee regulatory needs.

In the current plans for decentralization, it is not expected that the transfer of technical talent will reduce any headquarters organization to a level below

QUESTION #3.

that which is necessary to perform its assigned functions. The NRC does not plan to transfer entire organizational units of technical talent associated with operating reactors from NRR to the regions. The NRC staff expects that some people within the technical review disciplines in NRR would opt for regional assignments provided that their skills and expertise match regional needs. NRR would maintain adequate capabilities in the areas of expertise needed to perform its functions. The issue is one of distributing technical talent in a way that enables NRC to manage its resources and to provide effective and efficient service to licensees and the public.

Several more specific questions and answers are presented below:

QUESTION 3: How will technical competence of the NRC headquarters staff be maintained once technical decision making is dispersed to regional offices?

ANSWER.

The NRC staff has not adopted an approach of dispersing all technical decision making to Regional Offices. The attached "Delegation and Assignment to Region IV of Certain Licensing Functions for the Fort St. Vrain Nuclear Generating Station" described the portions of technical decision making that Region IV has received and that NRR has retained. The delegation is a model that will be followed in future transfers. Maintaining adequate technical competence to make technical decisions in NRC headquarters continues to be a fundamental management responsibility of the respective office directors.

QUESTION 4: When new, unanticipated technical issues arise, will the headquarters staff or regional offices handle them initially? How will direction be provided to prevent overlapping and possibly conflicting activities?

ANSWER.

When new, unanticipated technical issues arise, the nature of the issue will determine how it will be handled. Two examples of significant issues that caused immediate but not duplicative action in both headquarters and regions were the scram discharge volume problem at boiling water reactors (June 1980) and failure of reactor trip breakers to trip at a pressurized water reactor (February 1983). Response to these events demonstrated that both headquarters and regions are capable of and do exercise proper technical judgment in identifying and referring significant issues to the appropriate organization in NRC. The level of communication between regions and headquarters (e.g., dissemination of prompt notifications, daily calls on events, written preliminary notifications, and task interface agreements) is adequate to prevent significant overlapping and possible conflicting activities from occurring.

QUESTION 5: How will existing channels of communication be altered with

QUESTION #3.

respect to flow of information to and from the regional offices? For example, how will the interpretation of safety research results and other technological developments be promulgated to the regional offices in support of their technical decision making?

ANSWER.

Existing channels of communication between Regional and Headquarters Offices have already been strengthened in recent months in terms of content and frequency to support increased interaction, and we expect this trend will continue as decentralization continues. Safety research results and other technological developments will be interpreted in headquarters in their application to existing unresolved safety issues or identification of new safety issues. Headquarters offices are now and will remain responsible for technical resolution of unresolved safety issues and similar multiplant issues. To the extent that safety research results and technological developments apply to plant-specific issues, these results and headquarters interpretations as to how they apply to a specific plant will be promulgated to the regions via reports and other written communication, telephone conferences and meetings as necessary.

QUESTION 6: How will an appropriate degree of consistency be maintained among the different field offices to avoid differences in interpretation of NRC regulations and differences in policy/judgment/attitude among regional directors? What are the standards of consistency to be used in judging how well regional offices function? What mechanisms will exist for licensees to appeal substantive inconsistencies, if they do occur, without concern regarding punitive action?

ANSWER.

Consistency is an issue the agency has been dealing with since the initial decentralization of the inspection and enforcement functions. This initiative does not introduce new problems over those that have had to be faced previously.
Communication of many forms will be used among regions and headquarters to ensure that consistency of interpretation is maintained. Examples include periodic meetings of counterparts at management and working levels, discussion of issues that raise questions of interpretation and monitoring and oversight of regional implementation by headquarters offices. The regional offices are not in a position to make policy, but rather to implement the program policies of headquarters offices.

The standards of consistency are developed by headquarters offices and applied during evaluation of the regions as part of program oversight activities. The safety implications of regional decisions are believed to be an essential part of these standards. Licensees may communicate to appropriate levels of NRC management any situations in which they believe that substantive inconsistency exists or has occurred.

QUESTION #3.

Enforcement actions, if warranted in response to violations of NRC regulations, will be administered according to approved NRC enforcement policy and the NRC rules of practice.

QUESTION 7: What quality assurance mechanism will be in place to monitor and control the performance of the regional offices? How will overly rigid or overly permissive performance by individual offices be recognized and addressed?

ANSWER.

The Executive Director for Operations holds each headquarters program office director responsible for the success of assigned programs irrespective of whether these programs are implemented in headquarters or the regions. Program oversight and monitoring by headquarters offices is the quality assurance mechanism.

QUESTION 8: What will be the dividing line for those technical decisions to be made by the regional offices and those to be made by the headquarters staff? Will these be based on safety significance, generic versus plant specific considerations, scheduling, or other factors?

ANSWER.

As a specific example, the dividing line between decisions made in headquarters and those made in the field are delineated in the attached delegation and assignment that has been executed for Fort St. Vrain. A similar delegation and assignment will be executed for each function that is transferred to the regions.

QUESTION 9: What distribution of technical talent will be needed in NRC headquarters and the regional offices to deal with the wide variety of technical issues which are already know to exist and those which may develop in the future? What is the basis for this allocation of resources? Recognizing that this shift is partly to accommodate an increased emphasis on support of plant operations versus licensing actions, what action will be taken to reorient and/or redirect the activities of headquarters and regional personnel in this direction?

ANSWER.

The distribution of technical talent will be dependent on (1) the needs of the regions to perform inspection, licensing and response functions that will be transferred to the regions and (2) the needs of headquarters to deal with technical issues that currently exist and may develop in the future. In the next few years, we expect a general strengthening of engineering skills and operating reactor project management skills in the Regional Offices. The distribution of technical talent in Headquarters Offices will remain about the same during this period. In the longer term, the regions will continue their strengthening of engineering and project management talent as well as an increase in inspectors for the new plants coming on line. The shift in

QUESTION #3.

emphasis from operating license casework to operating reactor licensing activities will undoubtedly lead to some realignment of headquarters skills (for example, a reduced need for environmental review skills). However, the Headquarters Offices will maintain the essential safety skills of the staff.

QUESTION 10: In view of the observations of the NAS/NRC Committee on FAA Airworthiness Certification Procedures (Reference 1) that the regional structure of the FAA has contributed to a lesser technical competence in the FAA, and their recommendation regarding the need for a strong centralized technical staff to accomplish various FAA regulatory functions, what are the differences between FAA and NRC regulatory responsibilities, functions or procedures that make decentralization of technical functions appropriate for NRC.

ANSWER.

The NRC plans to maintain a strong centralized technical staff to perform all the safety, environmental and antitrust reviews of applications for Construction Permits (CP), Operating Licenses (OL), Standard Plants design approval and topical report approval. The NRC headquarters offices will also perform the activities associated with the resolution of Unresolved Safety Issues (USIs) and other generic issues, generic studies, the performance of risk and reliability assessments, and the systematic assessments of reactor operating experience. The development and approval of new regulatory requirements and modification of existing requirements resulting from the safety improvement efforts will continue to be the responsibility of the headquarters offices. Relative to licensing actions associated with operating reactors, NRC headquarters will review and implement all actions during the first year after a reactor receives a full power operating license. In addition, headquarters offices will be responsible for implementing the Systematic Evaluation Program (SEP) for operating reactors and will be responsible for implementing certain generic licensing actions (e.g., requirements associated with pressurized thermal shock and steam generator tube integrity) on all reactors to which they apply.

The major difference in regulatory responsibilities of FAA and NRC deal with the facilities to which they are applied. NRC licenses single custom-built reactor facilities whereas FAA certifies facilities (aircraft) in a production environment where many duplicate units are built. The FAA study also points out that the appeal has diminished from that which FAA jet propulsion projects once held for technical experts on the frontier of technology. This has had an impact on the ability of FAA to attract experts to the extent that technical competence at FAA has decreased. It is not suggested that FAA technical competence is now inadequate for a mature industry, but that the nature of FAA regulation has changed.

It should be noted that the cited study of FAA recommended an organization with the central core of competence located at headquarters, unlike the current FAA system. Under the NRC regionalization concept, the central core will still be at headquarters--thus we are moving towards an arrangement not unlike that in

QUESTION #3.

the NAS/NRC recommendations. The Commission is planning a meeting with the FAA soon to understand better the regulatory processes used by that agency.

QUESTION 11: What plans have or will be made for a satisfactory interface of the ACRS with the regional offices to be sure that the Committee can fulfill its statutory responsibilities?

ANSWER.

Regional personnel including Administrators have appeared before the ACRS in the past in situations where regional personnel had been most knowledgeable of plant operations or events, for instance, and could provide the best information to the ACRS. This practice will continue and will be expanded by virtue of regional personnel being most knowledgeable of those activities that are conducted in the regions. As noted above, significant unresolved safety issues, generic issues, multiplant actions and significant hazards considerations remain the purview of headquarters offices, which would interact with ACRS according to established practice. Interests of the ACRS that are within the cognizance of the regions will cause the appropriate level of interaction with the regions.

QUESTION 3. - ATTACHMENT

ADDITIONAL VIEWS OF COMMISSIONER ASSELSTINE

I support the issuance of this Policy Statement on Regionalization as a means for describing the regionalization program adopted by the Commission and for obtaining comments from the public, the states and the industry on the need for, advantages and disadvantages of the various elements of this program. The Commission's stated intent in the policy statement is to make nuclear regulation more effective. I certainly agree with that objective, and I support most of the initiatives that enlarge the role of the regional offices to accomplish that purpose. Among the initiatives that I support as being appropriate functions of the regional offices are: regulation of uranium mills, emergency planning reviews, selected materials licensing, and state liaison.

However, I have serious reservations about another element of the Commission's regionalization plan -- the transfer of certain licensing authority for operating power reactors from the headquarters Office of Nuclear Reactor Regulation to the regional offices. It appears to me that the transfer of this responsibility to the regional offices has three potential disadvantages that may well have a negative impact on the effectiveness of our regulatory program for operating reactors.

First, this element of the Commission's regionalization program is likely to create new barriers to reaching sound licensing decisions for operating reactors. The transfer of operating reactor licensing authority to the regional offices will place the licensing authority with individuals

QUESTION 3. - ATTACHMENT

who are geographically far removed from this Agency's core of technical expertise on reactor safety matters. At the same time, the regional licensing personnel will be expected to continue to rely on the headquarters core technical staff for the bulk of the technical analysis needed to support the regional licensing activities. This geographical separation of those responsible for licensing and those responsible for the necessary technical support work can be expected to create new obstacles to assuring that the technical analysis needed to support operating reactor licensing decisions is carried out in an accurate, effective and timely manner.

Indeed, the Commission has long recognized that similar problems exist in other areas of our regulatory programs as a result of the dispersed location of our headquarters staff in several different buildings in the Washington, D.C. metropolitan area. Given the far greater geographical separation, I would expect these problems to be much more acute in the case of the regionalization of operating reactor licensing authority.

In addition, the transfer of operating reactor licensing authority to the regional offices will break up and disperse the pool of experience that presently exists within the collective group of operating reactor project managers now located at headquarters. This reduced ability of project managers to draw readily upon the collective experience of other project managers will be compounded by the potential loss to the agency of a number of experienced and knowledgeable project managers who may be unwilling or unable to relocate from Washington, D.C. to one of our regional offices. Taken together, these effects of regionalization could well hinder the Agency's ability to reach sound licensing decisions for operating reactors.

Second, the transfer of operating reactor licensing authority to the regional offices is likely to introduce new inefficiencies in nuclear reactor regulation that may be unjustified in light of present budget limitations and that may adversely affect other NRC safety responsibilities. Under the present NRC licensing approach, operating reactor licensing activities are carried out by one headquarters office -- the Office of Nuclear Reactor Regulation. Under the Commission's regionalization program, the regional offices would assume licensing responsibility for operating reactors, but the headquarters Office of Nuclear Reactor Regulation would be required to audit the performance of the regional offices. In effect, the headquarters office would be required to inspect the licensing work done by the regional office and verify its adequacy. This approach inevitably will require more staff resources than the present approach. If additional staff positions cannot be provided to the regional offices, this will reduce the level of regional staff effort in other areas, such as inspection and enforcement activities for operating reactors. Indeed, our regional administrators have stated that the development and conduct of regional program audits thus far are already tending to shift resources away from inspection activities.

Third, the transfer of operating reactor licensing authority to the regional offices is likely to create new difficulties in assuring uniformity and consistency in all licensing decisions for operating reactors. Licensing decisions previously made by one centralized headquarters office will now be made by five separate regional offices. The Commission's policy statement describes in only general terms the management controls, such as program audits by the headquarters office, that would be used to assure uniformity and consistency among the regions. Absent a more detailed specification of how these controls will operate, it is difficult to determine whether regionalization of these functions can ensure a uniform application of safety principles at the operating nuclear power plants spread throughout the five regions. Nor does our experience with regionalization thus far in other areas provide great confidence in our ability to ensure uniformity in the operating reactor licensing area. Our experience with regionalization in other areas of nuclear regulation is still quite limited, and operating reactor licensing issues are both more complex and less settled than is the case with other responsibilities that are being transferred to the regional offices.

Taken together, I believe that these disadvantages associated with the transfer of operating reactor licensing authority raise serious concerns about this element of the Commission's regionalization program. At the same time, I fail to see any clear and overriding safety benefit to be obtained by transferring these functions to the regional offices. I hope that the public meetings to be held on this policy statement, as well as the public comment period, will focus attention on these concerns as well as on the following broader questions related to regionalization:

QUESTION 3. - ATTACHMENT

1. What is the problem or issue that regionalization is attempting to solve, and are there other remedies?

2. Does regionalization improve or detract from the protection of the public health and safety, and what are the considerations that lead to that conclusion?

3. How does regionalization affect the effectiveness and efficiency of nuclear reactor regulation?

4. What controls are needed to ensure a uniform application of safety principles?

5. To what extent will safety reviews and reactor inspections be vulnerable to adverse trade-offs if both responsibilities are assigned to the same office?

In that regard, I note that our Advisory Committee on Reactor Safeguards has recently asked the staff to address a series of similar concerns regarding regionalization. I believe that the ACRS concerns can also serve as a useful basis for public comment on regionalization, and I have attached a copy of the ACRS letter to my views for this purpose. I also agree with the Advisory Committee on Reactor Safeguards that regionalization represents a major shift in the manner in which NRC will address safety related issues, particularly for operating reactors.

QUESTION 3. - ATTACHMENT

The Commission's regionalization program calls for the transfer to the regional offices of licensing authority for eighteen operating power reactors in fiscal year 1984 and for an additional thirty operating power reactors in fiscal year 1985. Given the above concerns, I believe that this rapid a transfer of operating reactor licensing authority is unwise. I therefore would limit the transfer of operating reactor licensing authority during fiscal years 1984 and 1985 to a pilot program involving a limited number of power reactors. This would provide an opportunity to gain some experience with the approach of regionalizing safety responsibilities for power reactors, and would provide the opportunity for an informed judgment on the advantages and disadvantages of this approach, before committing to a major transfer of authority in this area.

Finally, I would extend the public comment period for this policy statement until at least thirty days after the date of the final regional meeting on the subject in order to ensure an opportunity for informed comment.

.TTACHMENT B - QUESTION #

Additional Views of Commissioner Ahearne on Regionalization

I have strongly supported moving some NRC activities from Headquarters into the field and strengthening the regional offices of the NRC. Whether these actions are described as decentralization, regionalization, or by some other name, the basic steps and purposes are the same.

The NRC located in Washington is increasingly isolated from the major activities which form the reason for this agency. Since the NRC was formed there has been a steady increase in NRC activity at operating reactors, at other licensee sites, and in the interaction with state and local governments. The resident inspector program, described in the policy statement, has shown the great value of having someone more closely connected with the local situation. Regional headquarters are obviously not directly local--since in some cases they may be many hundreds of miles away--but they are local in perspective, rather than the oft felt Olympian height of Washington, D.C.

Regionalization should produce a better two-way interaction with state and local government and with the licensees. Regional people are more approachable, more reachable. This better interaction will occur even with reactor licensees--not necessarily with the policy makers, e.g., the chief executive officers, but certainly with the lower and middle management, the ones who actually run the plants.

In a section deleted by the Commission, the EDO had pointed out that in addition to the criteria listed which were used to identify activities proposed for transfer[1], "[T]he changing nature of the nuclear reactor regulation workload was also considered. The major effort associated with nuclear power plant regulation is projected to shift from licensing new plants to maintaining the licenses of operating reactors." As the NRC evolves into an agency whose basic business is monitoring operating reactors, there will be more activity in the field. This will require strengthening the technical competence in the field independent of how one believes the Headquarters should be staffed.

Given this perspective, I believe the NRC appropriately has taken three actions: (1) We have upgraded the Directors of the field offices, both in civil service rank and in title, so they are now equivalent to the major office directors in Washington and report, as do office directors, to the Executive Director for Operations. (We are also attempting to upgrade the staff positions in the field.) (2) We have been expanding functions done in the field--in the past it has included the pilot programs for materials licensing and operator licensing. And (3) we are strengthening the technical competence in the field offices.

There are hazards, as has been pointed out by some Commissioners and by the ACRS. One hazard is the potential loss of technical capability in Washington. This should not be serious. Even under the proposal to shift licensing actions for operating reactors to the field, we would still retain

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[1] The policy statement now describes these criteria as benefits. However, the EDO described them as criteria used to identify activities to be proposed for transfer.

ATTACHMENT B - QUESTION 3

in Washington licensing reviews for new reactors, unresolved safety issues, and generic issues--the really tough and broad questions. The proposed regionalization program has been criticized as stripping bare the core of technical competence of NRR. However, in 1982 there were 7 staff years devoted in the field to reactor regulation and 731 in Washington. Under the regionalization proposal, in 1985 there would be 134 in the field and 575 in Washington. While this is a very large increase in the field, it still retains approximately 80 percent of the staff years of nuclear regulation in Washington. This hardly should cripple the core of technical competence. A second problem could be inconsistency among the regions. The appropriate way to handle this potential problem is, first, by keeping major actions in Washington, as we already are doing in the enforcement area. Second, we must make the Headquarters offices establish policy. Under regionalization Headquarters offices would establish policy, which field offices would implement. A major weakness of the NRC, from the Commission on down, has always been (as both the GAO and the NRC Special Inquiry Group noted) its reluctance to establish policy. The NRC has always been weak on policy and strong on ad hoc case-by-case solutions. We must change, and the offices must establish policy rather than treat every issue as a unique issue.

Consequently, I believe that the organization, which was appropriate at the birth of nuclear power and for the regulation of reactors when most of the business of the agency was reviewing applications during the licensing process, is no longer an appropriate organization for an agency whose predominant role will be the reviewing of licensees that are scattered all over the country. Because of the technical complexity of some of the problems the NRC will always face, it is appropriate to maintain a central core of high competence in Washington. However, I believe that it is past time for the NRC to begin to build up its regional operations and I think that the proposed steps are sound.

QUESTION 3.

Enclosure 1
page 1 of 4

HEADQUARTERS' FUNCTIONS TO BE DECENTRALIZED

Function (Headquarters' Office)	FY 1982	FY 1983	FY 1984	FY 1985
1. Operating Reactor licensing actions--technical review (NRR)	532 All regions	400 All regions	500 All regions	615 All regions
2. Licensing authority for operating power reactors a/ (NRR)	-	Region IV: 1 reactor	Regions I, II III: 6 reactors per region; Region IV: 1 reactor	Regions I, II, III 12 reactors per re Region IV: 7 reac Region V: 6 react
3. Licensing authority for TMI-2 cleanup b/ (NRR)	-	-	Region I	Region I
4. Licensing authority for operating non-power reactors (NRR)	-	All non-power reactors in Regions I, IV, V	All non-power reactors in all regions	All non-power reac in all regions
5. Licensing authority for new and renewal applications for non-power reactors (NRR)	-	-	All non-power reactors in Regions I, IV, V	All non-power reac in all regions

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a/ NRR will retain licensing authority for certain types of operating power reactor licensing actions (e.g., pressurized thermal shock, steam generator inspection and repair, etc.). NRR will identify and maintain a current list of these items.

b/ The transfer of this function remains uncertain until the licensee funding sources are confirmed and major core removal activities begin.

QUESTION 3.

Enclosure I
page 2 of 4

HEADQUARTERS' FUNCTIONS REGIONALIZED

Function (Headquarters' Office)	FY 1982	FY 1983	FY 1984	FY 1985
6. Administer reactor operator license examinations (NRR)	Region III c/	Region II, III c/	All regions	All regions
7. Uranium mill tailings (NMSS) d/	-	Region IV	Region IV	Region IV
8. Authority to issue materials licenses (NMSS)	5 types of high volume licenses, Regions I, III	5 types of high volume licenses, All regions	10 types of high volume licenses, All regions	10 types of high volume licenses, All regions
9. Issue safeguards license amendments which do not decrease effectiveness for reactors and SNM facilities (NMSS)	-	Regions I, II	All regions	All regions
10. Conduct transportation route surveys and review contingency plans for spent fuel and Category 1 SNM shipments (NMSS)	-	-	Region III	All regions.
11. Perform closeout surveys and termination of uranium fuel fabrication licenses (NMSS)	-	All regions	All regions	All regions

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c/ NRR will provide for contract examiner assistance.

d/ To be implemented in accordance with W. Dircks' August 2, 1982 memorandum on establishing the Denver Field office.

QUESTION 3.

HEADQUARTERS' FUNCTIONS TO BE REGIONALIZED

Function (Headquarters' Office)	FY 1982	FY 1983	FY 1984	FY 1985
12. Maintain oversight of 10 CFR 70 licenses for advanced fuel (Pu) plants that have initiated decontamination and decommissioning activities. (NMSS)	-	All regions	All regions	All regions
13. Issue proposed civil penalties. [e] (IE)	All regions	All regions	All regions	All regions
14. Issue orders and make 10 CFR 2.206 decisions consistent with the transfer of licensing and enforcement authority from IE, NRR, and NMSS. (IE, NRR, and NMSS)	-	Regions I, IV, V	All regions	All regions
15. Conduct special licensing activities for operating reactors after emergency preparedness appraisal and reports. (IE)	-	All regions	All regions	All regions
16. Observe and appraise the annual emergency preparedness exercises for operating reactors. (IE)	All regions [f]	All regions	All regions	All regions

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[e] With IE concurrence.

[f] With IE assistance.

QUESTION 3.

HEADQUARTERS' FUNCTIONS TO BE REGIONALIZED

Function (Headquarters' Office)	FY 1982	FY 1983	FY 1984	FY 1985
17. Provide legal assistance consistent with the transfer of functions to review severity level III violations, proposed civil penalties and orders, 2.206 decisions, material licenses mill tailings licenses, and reactor licensing. (ELD)	All regions	All regions	All regions	All regions
18. Provide state agreement officer. (SP)	Regions II, IV	Regions I, II, IV, V	Regions I, II, IV, V	Regions I, II, IV, V
19. Continue state liaison function.	All regions	All regions	All regions	All regions
20. Perform license fee billings for materials licensing and inspection activities. (ADM)	-	Regions I, III	All regions	All regions
21. Perform budget formulation/execution and management information reporting activities.	All regions	All regions	All regions	All regions
22. Perform various administrative support services.	-	All regions	All regions	All regions

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

QUESTION 3.

[0128-82-5]

DEC 3 1982

MEMORANDUM FOR: John T. Collins
Regional Administrator
Region IV

FROM: William J. Dircks
Executive Director for Operations

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

SUBJECT: DELEGATION AND ASSIGNMENT TO REGION IV OF CERTAIN LICENSING FUNCTIONS FOR THE FORT ST. VRAIN NUCLEAR GENERATING STATION

Introduction

Pursuant to NRC Manual Chapter 0128, "Organization and Functions - Regional Offices", the Region IV Regional Administrator is hereby assigned and authorized to perform certain licensing functions described herein related to the Fort St. Vrain Nuclear Generating Station (FSV) of Public Service Company of Colorado (License No. DPR-34, Docket No. 50-267). As a result of this delegation and assignment, certain licensing functions previously performed by the Office of Nuclear Reactor Regulation (NRR) will now be performed by Region IV. Other licensing functions, as described herein, will remain the responsibility of NRR.

Pursuant to the Energy Reorganization Act of 1974, the Director, NRR is responsible for the principal licensing and regulation involving facilities and materials associated with the construction and operation of nuclear reactors licensed under the Atomic Energy Act of 1954, as amended. Therefore, NRR will remain responsible for determining overall licensing and regulatory policy pertaining to all licensed reactors, including FSV. To enable NRR to execute this responsibility properly, NRR will maintain oversight of all licensing functions related to FSV, including those that are delegated pursuant to this assignment. This oversight will be implemented by NRR staff review of correspondence to and from the licensee, by periodic implementation assessments of Region IV licensing activities, and by coordination and consultation between Region IV and NRR regarding selected licensing actions. The Director of NRR retains the authority to take actions determined necessary in all matters hereby assigned and delegated to Region IV.

Pursuant to this delegation and assignment, Region IV is responsible for implementing established NRC licensing and regulatory policy at FSV. The specific assignments to Region IV are set out below. Licensing and regulatory matters which have not been specifically delegated and assigned to Region IV pursuant to this Memorandum remain the responsibility of NRR.

QUESTION 3.

Should NRR and Region IV disagree on whether a FSV licensing action is being suitably handled by Region IV in accordance with overall licensing and regulatory policy, the matter will be resolved between the Director of Licensing, NRR, and the Director, Division of Resident Reactor Projects and Engineering Programs, Region IV. Should attempts at resolution be unsuccessful at that level, the matter will be referred to the Director of NRR who will consult with the Regional Administrator of Region IV and other appropriate officials before reaching a decision.

Specific Delegations and Assignments to Region IV

1. Review, process and take final action on all licensing actions related to FSV except those related to generic issues and those involving exemptions to the Commission's regulations. Before acting on applications that seek to amend License DPR-34 itself, concern anti-trust or safeguards matters, affect established licensing and regulatory policy, or involve potential significant hazards considerations, Region IV will consult with NRR. Before denying an application to amend the FSV license or Technical Specifications and before making a determination that an application involves significant hazards considerations, Region IV will consult with NRR. (Significant hazards considerations and established regulatory policy are discussed in the guidance section of this Memorandum.) The degree of consultation with NRR will vary, depending on the complexity of the issue involved, and may involve the furnishing of draft evaluations to NRR. Region IV will subsequently act upon such matters after completing consultations with NRR.

2. Review, process, and respond to all requests for action pursuant to 10 CFR 2.206 and, as necessary, issue orders to suspend, modify, or revoke License No. DPR-34. Before acting on 10 CFR 2.206 requests or issuing orders related to FSV, Region IV will consult with NRR. Region IV will subsequently act upon such matters after completing consultations with NRR.

3. Review, evaluate, and make safety findings on issues, problems, and incidents that relate to the operation or modification of FSV. These matters may require consultation with NRR if they could reasonably be expected to involve amendments to license DPR-34 itself, anti-trust or safeguards matters, affect established licensing or regulatory policy, or involve significant hazards considerations.

4. Coordinate with the Division of Licensing, NRR, for those matters relating to assigned licensing actions that involve consultation with NRR or that require technical assistance from other NRR Divisions or NRC Offices. Examples of areas where technical assistance may be needed include emergency preparedness and safeguards licensing actions, and multi-disciplined reviews of proposed licensing actions involving health and safety considerations.

5. Coordinate with License Fee Management Branch, ADM, regarding fees related to assigned licensing actions.

6. Coordinate with Freedom of Information and Privacy Branch, ADM, regarding FOIA requests relating to FSV.

7. Coordinate with the FSV local public document room regarding activities and documents relating to FSV.

8. Coordinate with the Docketing and Service Branch, SECY, regarding Federal Register Notices related to assigned licensing functions.

9. Prepare and circulate environmental impact statements, appraisals, and negative declarations regarding assigned licensing actions.

10. Review and evaluate submittals and reports made by the licensee pursuant to FSV license conditions, Technical Specifications, and NRC regulations.

11. Review periodic updates to the FSAR.

12. Review, evaluate, and process Multi-Plant Action items relating to FSV as assigned by NRR.

13. Arrange with contractors for technical support in the conduct of assigned licensing matters. These arrangements shall be consistent with budget authority.

14. Complete specific action items pertaining to FSV, assigned to Region IV, and listed in the Transfer Memorandum executed by the Director, Division of Licensing, NRR, and directed to the Director, Division of Resident Reactor Projects and Engineering Programs, Region IV, effecting the transfer of specific FSV-related responsibilities from NRR to Region IV. This Transfer Memorandum will provide a complete and current status report on all FSV licensing action items transferred to Region IV and will delineate clearly the current licensing action items to be retained by NRR.

15. Coordinate site visits and meetings with the licensee, including issuance of meeting notifications and meeting minutes, for matters relating to FSV.

16. Develop recommended Board notifications for matters relating to FSV and transmit them to the Director, Division of Licensing, NRR, for further processing.

QUESTION 3.

17. Review changes made by the licensee pursuant to 10 CFR 50.59 to determine whether they may constitute an unreviewed safety question or a change in the Technical Specifications. If the change is evaluated by Region IV as one involving a potential unreviewed safety question or a change in Technical Specifications, Region IV shall, after consultation with NRR, inform the licensee that the change cannot be implemented without NRC approval and that application pursuant to 10 CFR 50.90 is required.

18. Review changes made by the licensee pursuant to 10 CFR 50.54(p) to determine whether they decrease the safeguards effectiveness of the security, guard training and qualification, or safeguards contingency plans. This review should consider the safety impact of the security or safeguards change. If the change is evaluated by Region IV as one involving a decrease in the safeguards effectiveness of the plan or a significant safety impact, Region IV shall, after consultation with NRR, inform the licensee that the change cannot be implemented without NRC approval and that application pursuant to 10 CFR 50.90 is required.

19. Prepare and coordinate, consistent with current delegation authority, responses to correspondence received by the NRC related to FSV, such as responses to Congressional inquiries, state and local correspondence, or inquiries by members of the public.

20. For licensing matters which remain the responsibility of NRR and where Region IV technical expertise is required, Region IV will prepare draft SER and licensing action input.

21. Coordinate activities in support of hearings related to FSV, including technical arrangements, staff participation, and legal assistance from OELD and/or the Region IV Regional Counsel, as appropriate.

22. Maintain the integrated schedule of NRC regulatory activities related to FSV and submit to NRR the monthly input to the Operating Reactors Licensing Actions Summary (ORLAS) - NUREG-0748.

23. Coordinate the licensing input to the Systematic Assessment of Licensee Performance (SALP) activities relating to FSV.

24. Maintain the official NRC Docket file for FSV.

25. Submit Daily and Weekly Highlights input and Bevill Report input to NRR for matters relating to FSV.

26. Coordinate proprietary data reviews for matters related to the assigned licensing functions.

27. Coordinate the licensing input to Part 21 reports and Abnormal Occurrence reports for matters related to FSV.

28. Coordinate NUREG-0020 - Licensed Operating Reactors (Grey Book) input for FSV.

29. Provide NRR with copies of all incoming and outgoing correspondence related to FSV, including correspondence related to all licensing actions.

30. Provide weekly input to the NRR Regulatory Activities Manpower System (RAMS) for staff utilization in support of FSV licensing activities.

Specific Authorities and Responsibilities Retained by NRR

1. Review, process and take action on applications for exemptions to the Commission's regulations. NRR will consult with Region IV before taking action on FSV exemption requests and provide Region IV with copies of its actions on such requests.

2. Review, process, and take action on all generic licensing issues related to FSV. Any action that may affect more than one reactor is considered to be generic. If NRR action on generic issues is expected to impact on the Region IV activities regarding FSV, NRR will consult with Region IV prior to taking such action. NRR will issue generic letters to FSV and other licensees and provide copies to Region IV. For generic actions resulting in an amendment to the FSV license or Technical Specifications, Region IV will prepare the amendment package based on technical input provided by NRR. Region IV will issue the amendment package after completing consultations with NRR.

3. Maintain oversight of Region IV licensing activities to assure that NRC licensing policy and programs are suitably implemented with respect to FSV.

Applicable Guidance

1. Criteria for a "no significant hazards" determination and a related rule change are under development. General guidance (derived from the most recent draft of the proposed rule change) for making determinations regarding significant hazards considerations is provided as Enclosure 1 to this Memorandum. NRR may modify the guidance used in making significant hazards considerations by written memoranda to Region IV. Region IV shall consult with NRR if there is potential that an action contemplated by Region IV pursuant to this assignment may involve significant hazards. Most license amendments involve no significant hazards consideration and therefore are routine in nature.

QUESTION 3.

3. In performing technical evaluations on matters relating to FSV, NRR and Region IV may consult with and request technical assistance from each other in resolving specific technical issues. All Region IV requests for technical assistance from NRR or other Headquarters organizational entities shall be directed to the Director, Division of Licensing. As prescribed by established procedures, the Division of Licensing will coordinate technical assistance with other organizational entities in NRC. All NRR requests for technical assistance from Region IV will be directed to the Director, Division of Resident Reactor Project and Engineering Programs.

4. In the event that the licensee disagrees with a decision made by Region IV regarding the assigned licensing functions for FSV, resolution should be sought with the Regional Administrator of Region IV. If resolution still cannot be achieved, the licensee shall be informed in writing by Region IV, with a copy to NRR, that it may seek resolution of the matter with the Director of the Office of Nuclear Reactor Regulation.

5. NRR shall provide the support necessary to enable Region IV to assume the responsibilities described herein. This includes assisting in the training of Region IV personnel prior to and during the first three months following the assumption by Region IV of its new responsibilities.

6. Within six months of the transfer to Region IV of FSV-related licensing authority, NRR will formally review and evaluate Region IV implementation of the assigned licensing functions to assure consistency with NRC licensing policy.

(Signed) William J. Dircks

Date DEC 3 1982

William J. Dircks
Executive Director for
Operations

Date 11/24/82

Harold Denton, Director
Office of Nuclear Reactor
Regulation

QUESTION 3.

ENCLOSURE 1

SIGNIFICANT HAZARDS DETERMINATION GUIDANCE

EXAMPLES OF AMENDMENTS THAT ARE CONSIDERED LIKELY TO INVOLVE SIGNIFICANT HAZARDS CONSIDERATIONS ARE LISTED BELOW:

1. A significant relaxation of the criteria used to establish safety limits.
2. A significant relaxation of limiting safety system settings or limiting conditions for operation.
3. A significant relaxation in limiting conditions for operation not accompanied by compensatory changes, conditions, or actions that maintain a commensurate level of safety.
4. Renewal of an operating license.
5. For a nuclear power plant, an increase in authorized maximum core power level.
6. A change to Technical Specifications involving a significant unreviewed safety question.
7. A change in plant operation designed to improve safety but which, in fact, allows plant operation with safety margins of some significance reduced from those believed to have been present when the license was issued.
8. Reracking of a spent fuel storage pool. *

EXAMPLES OF AMENDMENTS THAT ARE CONSIDERED NOT LIKELY TO INVOLVE SIGNIFICANT HAZARDS CONSIDERATION ARE LISTED BELOW:

1. A purely administrative change to Technical Specifications: for example, a change to achieve consistency throughout the Technical Specifications, correction of an error, or a change in nomenclature.
2. A change that constitutes an additional limitation, restriction, or control not presently included in the Technical Specifications: for example, a more stringent surveillance requirement.

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* Commissioner Roberts disagrees that this constitutes an action requiring a significant hazards determination.

3. For a nuclear power reactor, a change resulting from a nuclear reactor core reloading, if no fuel assemblies significantly different from those found previously acceptable to the NRC for a previous core at the facility in question are involved. This assumes that no significant changes are made to the acceptance criteria for the Technical Specifications, that the analytical methods used to demonstrate conformance with the Technical Specifications and regulations are not significantly changed, and that NRC has previously found such methods acceptable.

4. A relief granted upon demonstration of acceptable operation from an operating restriction that was imposed because acceptable operation was not yet demonstrated. This assumes that the operating restriction and the criteria to be applied to a request for relief have been established in a prior review and that satisfaction of the criteria are essentially self-evident.

5. Upon satisfactory completion of construction in connection with an operating facility, a relief granted from an operating restriction that was imposed because the construction was not yet completed satisfactorily. This is intended to involve only restrictions where it is essentially self-evident whether construction has been completed satisfactorily.

6. A change which either increases the probability or consequences of a previously-analyzed accident or reduces a safety margin but for which the results of the change are clearly within regulatory acceptance criteria: for example, a change resulting from the application of a small refinement of a previously used calculational model or design method.

7. A change to make a license conform to changes in the regulations, where the license change results in very minor changes to facility operations clearly in keeping with the regulations.

8. A change to a license to reflect a minor adjustment in ownership shares among co-owners already shown in the license.

QUESTION 4. In 1977, the Environmental Protection Agency's jurisdiction under the Clean Air Act was expanded to include the authority to regulate emissions of radioactive materials, including emissions from facilities licensed and regulated by the NRC. As you may know, EPA is now under court order to issue proposed regulations for radionuclides by March 29, 1983.

(a) Please discuss in detail the regulatory requirements currently imposed by the Commission on uranium fuel cycle facilities regulated by the NRC. In addition, please summarize all actions taken by the Commission and, to the extent known, by licensees, to comply with EPA's 40 CFR 190 standard.

ANSWER.

Paragraph 20.1(c) of 10 CFR 20, "Standards for Protection Against Radiation" specifies that persons engaged in activities under licenses issued by the NRC shall make every reasonable effort to maintain releases of radioactive materials in effluents to unrestricted areas As Low As Reasonably Achievable (ALARA). Furthermore, a licensee is not allowed to exceed the concentration limits specified in 10 CFR 20, Appendix B, Table II, at the boundary of the restricted area.

Licensees are required to evaluate effluent release data periodically to determine (1) if there are any upward trends in concentrations of radionuclides in effluents or environmental samples, (2) if concentrations of radionuclides in effluents can be decreased, under the ALARA concept, (3) if equipment for effluent control is being properly used, maintained and inspected.

At the time of license issuance or renewal, an environmental assessment of proposed or past operations is made and the annual dose to the nearest resident is calculated, using actual release data. This dose is compared to the 25 mrem per year individual dose specified in EPA's 40 CFR 190.

The 40 CFR 190 standard, although structured differently, is generally consistent with the levels resulting from implementation of ALARA programs under Part 20 and Part 50. Upon promulgation of 40 CFR 190, the NRC imposed specific conditions on fuel cycle licensees to assure that the 25 mrem annual dose is not exceeded. For uranium mills, emissions from exposed tailings areas cannot be readily measured, and evaluations of compliance with 40 CFR Part 190 are instead based on actual measurements or radioactivity concentrations at the nearest residence. NRC evaluation indicates that no fuel cycle licensee is exceeding the 25 mrem annual dose limit.

QUESTION. (b) Please discuss in detail the regulatory requirements currently imposed by the Commission on all facilities regulated by the NRC other than uranium fuel cycle facilities.

ANSWER.

As indicated in (a), all licensees are required to maintain releases of concentrations of byproduct, source and special nuclear material in air within the limits specified in 10 CFR 20, "Standards for Protection Against Radiation." In addition, the staff applies the well established principle of As Low As Reasonably Achievable (ALARA) in its licensing actions. This results in licensees using technologically and economically feasible equipment and procedures to further reduce concentrations of radionuclides released in air below the 10 CFR 20 limits. The largest number of licensees by far are byproduct material licensees. A broad based survey (NUREG-0819) (copy enclosed) of radioactive effluent releases from such licensees indicates that releases are generally well below 10 percent of the 10 CFR 20 release limits. To confirm the findings in NUREG-0819, independent detailed surveys were conducted through a contract with Oak Ridge Associated Universities of 11 licensees of a type which might be expected to release the highest concentrations of radionuclides in effluents. These surveys indicated that even for these licensees concentrations of radioactive materials in unrestricted areas as a result of effluent releases were generally less than a few percent of the applicable limits. The surveys were conducted to assess the effectiveness of the ALARA program which appears to work well.

NUREG-0819

A Survey of Radioactive Effluent Releases from Byproduct Material Facilities

Manuscript Completed: August 1981
Date Published: August 1981

J. R. Cook

Division of Fuel Cycle and Material Safety
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

ATTACHMENT
QUESTION 4b

QUESTION 4.

(c) Please discuss in detail the Commission's proposed revisions of 10 CFR Part 20. To what extent are the changes that the Commission is considering supported by the national and international scientific community?

ANSWER.

The enclosed comparative table shows the significant details of the revision to 10 CFR Part 20 now under development. A point to be emphasized is that the revision moves closer to a standard based on risk to the individual.

NRC staff has gone to considerable lengths to consult, concerning implementation of the revision, with professionals in the fields of health physics and medicine, with union and industrial groups and others. The response can be fairly described as cautiously favorable. i.e., supportive of the technical basis for the revision, but cautious concerning the technical feasibility and economic implications of implementation. Representative views of the national and international community, scientific and otherwise, can only be claimed to be available after NRC has published the proposed rule for public comment. However, it should be noted that the revision to 10 CFR Part 20 is based in part on the system of dose limitations developed by the International Commission on Radiation Protection, although the draft revision does not incorporate the ICRP concept of optimization which is felt to be unduly complex as a requirement to be applied by individual licensees.

TABLE 1. COMPARISON OF SALIENT ISSUES IN PRESENT 10 CFR PART 20 WITH PROPOSED REVISION

Issue	Present 10 CFR Part 20		Proposed Revision	
OCCUPATIONAL				
Limits	External			
	Whole body, head and trunk, active blood-forming organs, lens of eye, or gonads	1.25 rems/qtr or 3 rems/qtr with lifetime occupational exposure history and within 5(N-18) dose-averaging formula.	Whole body, head and trunk, arm above elbow, and leg above knee	5 rems/year includes summation of (external) deep dose equivalent and (internal) committed* effective dose equivalent. (See "Internal Dosimetric Methodology," below)
			Lens of eye	15 rems/year
	Hand and forearms; feet and ankles	18 3/4 rems/qtr (75 rems/yr)	Hand, elbow, arm below elbow, foot, knee, and leg below knee	50 rems/year
	Skin of whole body	7 1/2 rems/qtr (30 rems/yr)	Skin (10 cm^2)	50 rems/year
	No summation of internal (organ) doses.		Weighted organ doses summed.	
	No summation of external and internal doses.		Doses from external and internal sources summed.	

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*Except for selected uranium and transuranic radioisotopes for which the derived air concentrations (DAC) and annual limits of intake (ALI) are hard to measure at levels found in the workplace. For these isotopes, the regulation will be based upon the effective dose equivalent received in the year rather than the dose commitment.

ATTACHMENT QUESTION 4(c)

TABLE 1. (Continued)

<table>
<tr><th>Issue</th><th colspan="2">Present 10 CFR Part 20</th><th>Proposed Revision</th></tr>
<tr><td></td><td colspan="2">Internal</td><td></td></tr>
<tr><td></td><td colspan="2">Intake equivalent to 520 MPC-hours/qtr. Calculated to result in a 50-year committed dose of:</td><td>Annual limit of intake equivalent to 2000 DAC-hours/year.
DACs calculated in the following manner: Organs are assigned weighting factors, based on the estimates of risk to that organ per unit of dose relative to the estimate of risk per unit of dose for uniform whole body exposure. "Capping" dose limit of 50 rems/year used to avoid nonstochastic effects. For body parts other than those listed above:
<table>
<tr><th>Tissue</th><th>w_T</th><th>Inferred Dose Limit (rems/year)</th><th>Actual Dose Limit (rems/year)</th></tr>
<tr><td>Gonads</td><td>0.25</td><td>20</td><td>20</td></tr>
<tr><td>Breast</td><td>0.15</td><td>33</td><td>33</td></tr>
<tr><td>Red bone marrow</td><td>0.12</td><td>42</td><td>42</td></tr>
<tr><td>Lung</td><td>0.12</td><td>42</td><td>42</td></tr>
<tr><td>Thyroid</td><td>0.03</td><td>167</td><td>50</td></tr>
<tr><td>Bone surfaces</td><td>0.03</td><td>167</td><td>50</td></tr>
<tr><td>Each of 5 remaining organs with the largest dose</td><td>0.06</td><td>83</td><td>50</td></tr>
</table></td></tr>
<tr><td></td><td>Whole body</td><td>1.25 rems
(5 rems/yr)</td><td></td></tr>
<tr><td></td><td>Bone, thyroid and skin</td><td>7.5 rems
(30 rems/yr)</td><td></td></tr>
<tr><td></td><td>Other organs</td><td>3.75 rems
(15 rems/yr)</td><td></td></tr>
<tr><td>Planned Special</td><td colspan="2">5(N-18) dose averaging provided - with quarterly limits.</td><td>Planned special exposures allowed. Limits set at 2 x annual dose limit/event, not more than 2 x annual limit/year, and 5 x annual limit/lifetime. 5(N-18) dose averaging provision eliminated.</td></tr>
</table>

ATTACHMENT QUESTION 4(c)

TABLE 1. (Continued)

Issue	Present 10 CFR Part 20	Proposed Revision
Embryo/Fetus	Not addressed.	0.5 rem/entire pregnancy due to occupational exposure of the "declared" pregnant woman
ALARA	Recommended.	ALARA program required.
Occupational reference level	None	Investigation level--set by licensee below annual limit.
BASIS FOR LIMITS	Biological damage or health effects would not be statistically observable.	"Acceptable" risk based on estimated incidence of fatal cancers and serious hereditary disorders. Upper limits of organ-dose set to avoid nonstochastic (threshold) effects, such as cataracts.
INTERNAL DOSIMETRIC METHODOLOGY		
Irradiation	Dose to the most irradiated organ, e.g., "critical organ," used to limit intake via "Maximum Permissible Concentrations."	Dose to each organ is calculated, weighted by a factor equating risk from dose to that organ to risk from 5 rems of whole-body irradiation, and then the products are summed. Values for Annual Limit of Intake (ALI) and Derived Air Concentration (DAC) have been calculated for each radionuclide.
	Doses from radionuclides deposited in non-critical organs are ignored.	Weighted doses to organs from radionuclides deposited anywhere in the body are summed.
Lung model	1959 ICRP-2 model used.	Improved 1966 model of ICRP Task Group on Lung Dynamics used.
Retention in lung	Aerosols ranked "Soluble" or "Insoluble."	Aerosols ranked by translocation and elimination rates, e.g., D (days), W (weeks), and Y (years).

ATTACHMENT QUESTION 4(c)

TABLE 1. (Continued)

Issue	Present 10 CFR Part 20	Proposed Revision
	No consideration given for aerosol aerodynamic properties.	Assumes 1 µm AMAD. Adjustments for other aerosol size distributions, and physical and chemical properties are possible.
Translocation	Based on 1959 biological data.	Based on 1978 biological data from ICRP-30.
PUBLIC		
Limit	Implied limit of 0.5 rem/year for individuals. No summation of external and internal dose. No consideration of food pathways.	Explicit limit of 0.5 rem/year for individuals from all sources. Includes summation of external and internal doses and food pathways.
Reference levels	None.	0.1 rem/year to member of the public as action level for licensee.
De minimis level	None.	0.001 rem/year de minimis level for dose rate to individuals. 0.0001 rem/year de minimis level for collective doses to general population.
MONITORING		
Adult	Required at 25% of the basic quarterly limit (0.312 rem).	Required at 10% of the annual limit for deep dose equivalent (0.5 rem). Required at 10% of the annual limit for eyes, skin, or extremities. Required at 30% of the ALIs.
Minor	Required at 5% of the basic quarterly limit (0.0625 rem).	Required at 5% of the annual limits for adults. Required at 5% of the ALIs for adults.
SEWER DISPOSAL	Concentration limits equivalent to 5 rems/year by potential ingestion.	Concentration limits equivalent to 0.5 rem/year by potential ingestion.

ATTACHMENT QUESTION 4(c)

TABLE 1. (Continued)

Issue	Present 10 CFR Part 20	Proposed Revision
RECORDS		
Determination of prior dose	Occupational exposure history required as provision of 3 rems per quarter and 5(N-18). Signed statements of dose during last quarter required upon employment.	Occupational exposure history (dose equivalent received during the current year and all planned special exposures and overexposures received during the lifetime of the individual) required for all individuals likely to receive more than 30% of the annual limit.
Current exposure records	Form NRC-5 includes only external dose. Includes items for calculating status under 5(N-18).	Revised Form NRC-5 includes external dose, internal dose, summation, and dose received during planned special exposures and as overexposures.
Effluent releases	Implied under survey requirement.	Explicitly required.
Planned Special Exposures	No provision.	Records required.
REPORTS		
Criteria for immediate notification of incidents	20 times the basic quarterly dose limits.	5 times the new annual dose limits.
	Property damage $200,000.	Loss of facility use and property damage criteria deleted.
Overexposures of public	Required if limits for short-term radiation levels or annual effluent releases to unrestricted areas are exceeded.	Required if any individual in an unrestricted area exceeds 0.5 rem in one year from all sources.
Planned special exposures	No provisions for planned special exposures.	Report required.

ATTACHMENT QUESTION 4(c)

TABLE 1. (Continued)

Issue	Present 10 CFR Part 20	Proposed Revision
REPORTS (Continued)		
Exceeding reference levels	No provisions.	Report required for exceeding 0.1-rem level to members of public. No report required for exceeding investigation level for occupational exposure.
De minimis	No provision.	No reporting requirement.
Individual monitoring reports	Annual statistical summary report required of 6 categories of licensees.	Report of annual and planned special exposure doses required of all licensees for each individual for whom monitoring is required. Annual statistical summary report would not be required.
	Termination report required of same 6 categories of licensees.	Not required.
Reports to individuals	Required for any information reported to NRC. Applies only to overexposures and termination reports.	Required for any information reported to NRC. The change in reporting requirements would require licensees to inform each individual of annual and planned special exposure doses each year. Estimates of 50-year dose commitment would also be required to be reported for those employees exposed to certain uranium and transuranic isotopes.
Notification of intent to vacate premises.	Not required.	Required 30 days before vacating.

ATTACHMENT QUESTION 4(c)

QUESTION 4.

(d) What discussions, if any, has the Commission (or Commission staff) conducted with EPA on proposed Clean Air Act standards for NRC-licensed facilities? Please provide copies of all correspondence between the Commission and EPA on this issue.

ANSWER.

Following the determination by the EPA Administrator in November 1979, that airborne radionuclides should be listed as hazardous pursuant to Section 112 of the Clean Air Act, a Memorandum of Understanding was signed by EPA and NRC (Enclosure A) which recognized their overlapping jurisdictional authority and sought to minimize duplication of effort and conserve resources by providing for transfers of information. Consistent with that MOU and pursuant to the court order to issue proposed standards, EPA and NRC staff met on November 16, 1982, to determine whether NRC held any information that might be useful to EPA in developing the proposed standards. As a result of the meeting, reports of the surveys described above in response to 4(b) were provided to EPA by NRC staff together with information relating to research reactor emissions.

On January 21, 1983, EPA and NRC staff principals met to discuss the draft proposed standard developed in part from the NRC data. Two points emerged from the discussion, on which it was agreed that further staff exchange would be appropriate. First was the mutual recognition that the standard should permit practicable regulatory implementation. It was suggested that existing NRC regulatory practices would be suitable for demonstrating compliance with the standard and that NRC staff would provide suggested language for the implementation paragraph of the draft proposed standard which would reflect that concept. Subsequently, the contents of a draft NRC letter concerning the structure of the proposed standard, potential difficulties of implementation, and the suggested implementation language were discussed on the telephone by Mr. Minogue (NRC) and Mr. Sjoblom (EPA). A copy of the draft letter (Enclosure B) was also sent to Mr. Sjoblom under a note calling attention to possible discrepancies in the EPA calculations.

Informal meetings between EPA and NRC technical staff resulted in corrections to the EPA calculations relative to research reactor emissions. Subsequent exchange served to confirm that the comments in the draft letter sent to Mr. Sjoblom fairly encompassed the informal NRC staff views but that the official agency position would only be developed in response to the publication of the proposed rule for comment.

federal register

Monday
November 3, 1980

Part VII

Environmental Protection Agency

Nuclear Regulatory Commission

Regulation of Radionuclide Emissions From Sources and Facilities Licensed by NRC; Memorandum of Understanding

ENCLOSURE A

ATTACHMENT QUESTION 4(d) - 1

ENVIRONMENTAL PROTECTION AGENCY

NUCLEAR REGULATORY COMMISSION

[RH-FRL-1653-3]

Regulation of Radionuclide Emissions; Memorandum of Understanding

AGENCIES: Environmental Protection Agency, Nuclear Regulatory Commission.

ACTION: Notice of a Memorandum of Understanding.

SUMMARY: The Environmental Protection Agency (EPA) and the Nuclear Regulatory Commission (NRC) have entered into a Memorandum of Understanding as required by section 122(c)(2) of the Clean Air Act, as amended in 1977, with respect to the regulation of radionuclide emissions into air from sources and facilities licensed by NRC. This Memorandum defines in general terms the respective roles of the two agencies and establishes a framework of cooperation for avoiding unnecessary duplication of effort and for conserving resources in establishing, implementing, and enforcing standards for airborne radionuclide emissions from sources and facilities licensed by NRC. This Memorandum may be revised in the future as EPA develops Clean Air Act radionuclide standards applicable to NRC licensees.

ADDRESSES: Docket No. A-79-11, containing material relevant to this action, is located in the U.S. Environmental Protection Agency, Central Docket Section, Waterside Mall, West Tower Lobby, Gallery One, 401 M Street, SW, Washington, DC. The Docket may be inspected between 8 a.m. and 4 p.m. on weekdays, and a reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Paul J. Magno, Office of Radiation Programs (ANR-460), U.S. Environmental Protection Agency, Washington, DC 20460, telephone (703) 557-7380, or John W. N. Hickey, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 443-5966.

SUPPLEMENTARY INFORMATION: Under various statutes both EPA and NRC have the authority to regulate radioactive emissions of source material, byproduct material, and special nuclear material into the air. Under the Atomic Energy Act of 1954 and Title II of the Energy Reorganization Act of 1974, NRC is authorized to license and regulate the manufacture, production, receipt, acquisition, possession, ownership, use, and transfer of source material, byproduct material, and special nuclear material.[1] Under the Clean Air Act, as amended in 1977, EPA was also given the authority to regulate air emissions of source material, byproduct material, and special nuclear material.[2]

Section 122(a) of the Clean Air Act, as amended in 1977, directed the Administrator of EPA to determine whether emissions of radioactive pollutants (including source material, byproduct material, and special nuclear material) into ambient air will cause or contribute to air pollution which may reasonably be anticipated to endanger public health. If the Administrator made an affirmative finding, he was required to list radioactive pollutants as substances to be regulated under the Clean Air Act.

On December 27, 1979, the Administrator of EPA made an affirmative finding and listed "radionuclides" as hazardous air pollutants under Section 112 of the Clean Air Act (44 FR 76738, December 27, 1979). The term "hazardous air pollutant," as defined by Section 112, means an air pollutant to which no ambient air quality standard is applicable and which causes or contributes to air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness. After listing radionuclides as hazardous air pollutants under Section 112 of the Clean Air Act, the Administrator must promulgate regulations establishing standards for these pollutants, and where applicable, all sources and facilities emitting these pollutants, including NRC-licensed sources and facilities, must comply with these standards.

NRC-licensed sources and facilities include nuclear power plant operations and other activities in the nuclear fuel cycle, research and development laboratories, universities, research and test reactors, hospitals, radiopharmaceutical facilities, industrial users and various miscellaneous users of source material, byproduct material, and special nuclear material. Radionuclide air emissions from these licensed sources and facilities are already limited or controlled by a number of existing regulations and standards, including:

1. 10 CFR Part 20, "Standards for Protection Against Radiation," which among other things specifies limits for radionuclide releases into air from all NRC licensees and includes the provision that these releases should be "as low as reasonably achievable" (ALARA);
2. Appendix I of 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," which specifies numerical design objectives to insure that radionuclide releases from light water nuclear power reactors are kept "as low as reasonably achievable" (this regulation is implemented by NRC through technical specifications on individual licensees which specify release limits); and
3. 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations," which establishes generally applicable standards for radionuclide emissions from uranium fuel cycle facilities.[3]

Recognizing the overlapping jurisdictional authorities resulting from the Clean Air Act Amendments of 1977, Congress, under Section 122(c)(2) of the Clean Air Act, as amended in 1977, directed EPA and NRC, no later than six months after EPA lists any source material, byproduct material, or special nuclear material as a substance to be regulated under the Act, to enter into an interagency agreement with respect to those sources or facilities which are under NRC's jurisdiction. The Act states that this agreement shall minimize duplication of effort and conserve resources in establishing, implementing, and enforcing Clean Air Act radionuclide standards for sources or facilities licensed by NRC.

EPA and NRC have entered into such an agreement. Under this agreement EPA shall promulgate standards for airborne radionuclide emissions under its Clean Air Act authority and NRC shall have the primary role in implementing and enforcing these standards where applicable for sources and facilities licensed by NRC. EPA shall inform NRC of proposed actions for the development of Clean Air Act radionuclide standards for sources and facilities licensed by NRC and shall consult regularly with NRC during the standards development process. NRC shall assist EPA in standards development by: (a) providing information and recommendations, (b) participating in studies, and (c) reviewing and commenting on proposed standards.

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[1] Source material, byproduct material, and special nuclear material are radioactive materials as defined in the Atomic Energy Act of 1954 as amended.

[2] Under the Atomic Energy Act of 1954 and Reorganization Plan No. 3 of 1970, EPA also is authorized to establish generally applicable environmental standards for protection of the general environment from radioactive materials. These standards, which apply outside the boundaries of NRC-licensed facilities, are implemented by NRC through its licensing authority.

[3] This standard was issued by EPA under the Atomic Energy Act authority to establish generally applicable environmental radiation standards. Uranium fuel cycle facilities subject to 40 CFR 190 and regulated by NRC include uranium mills, uranium conversion plants, uranium fuel fabrication plants, light-water-cooled nuclear power plants using uranium fuel, and spent uranium fuel reprocessing plants, as defined in 40 CFR 190 (42 F.R. 2858, January 13, 1977).

ENCLOSURE A

ATTACHMENT QUESTION 4(d)-2

As EPA standards are developed for NRC-licensed sources and facilities, EPA and NRC will work together in developing mutually acceptable procedures for implementing and enforcing these standards. These efforts are expected to lead to a revision of this agreement defining the specific roles of each agency in implementing and enforcing these standards. This revision should be completed before EPA proposes its first standards applicable to NRC-licensed sources and facilities.

The text of the Memorandum of Understanding is set forth below.

Memorandum of Understanding Between EPA and NRC Concerning the Clean Air Act, as Amended in 1977

In accordance with Section 122(c)(2) of the Clean Air Act, as amended in 1977, to minimize duplication of effort and conserve resources in the regulation of radionuclide emissions to air from sources or facilities licensed by NRC, EPA and NRC agree to the following:

I. Establishment of Standards

1. EPA shall promulgate standards for airborne radionuclide emissions under its Clean Air Act authority.

2. EPA shall inform NRC of proposed actions for the development of Clean Air Act radionuclide standards for sources and facilities licensed by NRC and shall consult regularly with NRC during standards development.

3. NRC shall assist EPA in standards development by:

a. Providing EPA with available data and information on NRC-licensed sources and facilities as needed, including information on radionuclide air emissions, the environmental impact of these emissions, and control technology for reducing these emissions;

b. Participating with EPA in carrying out any necessary special studies at NRC-licensed sources and facilities; and

c. Providing recommendations and reviewing and commenting on EPA's proposed standards.

II. Implementation and Enforcement of Standards

1. NRC, using its own regulatory program and statutory and regulatory authorities, shall have the primary role in implementing and enforcing EPA's Clean Air Act radionuclide standards for sources and facilities licensed by NRC.

2. During the development of Clean Air Act radionuclide standards for NRC-licensed sources and facilities, EPA and NRC shall work together to establish mutually acceptable procedures for implementing and enforcing these standards. These procedures will be consistent with the provisions of the Clean Air Act and will allow both EPA and NRC to fulfill their statutory responsibilities with a minimum of duplication of effort. These procedures and the specific roles of each agency in carrying out these procedures will be defined in a revision to this agreement which should be completed before EPA proposes its first standards applicable to sources and facilities licensed by NRC.

III. Effective Date, Revision, and Termination

This Memorandum shall be effective immediately, and shall continue in effect until revised by mutual agreement, unless terminated by either party upon 120 days notice in writing.

Dated: October 17, 1980.

David G. Hawkins,

Assistant Administrator for Air, Noise, and Radiation, U.S. Environmental Protection Agency.

Dated: October 24, 1980.

William J. Dircks,

Executive Director for Operations, U.S. Nuclear Regulatory Commission.

[FR Doc. 80-34108 Filed 10-31-80; 8:45 am]

BILLING CODE [illegible]

F. Arsenault

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2:30 p

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

February 1, 1983

NOTE TO: Glen Sjoblom

FROM: Frank J. Arsenault

Frank Congel has questioned the EPA dose calculation for the reference non-power reactor. I've asked Paul Magno to arrange for a contact with Congel to resolve differences if possible.

If there is a need to further discuss the enclosed material or to address the difference raised by Congel, I will be glad to arrange an appropriate meeting or conference call.

Frank
Frank J. Arsenault

Enclosures:
1. Draft Letter
2. Section III.F Redraft

cc: R. Minogue
R. Cunningham
R. Mattson

ENCLOSURE B

ATTACHMENT QUESTION 4(d) - 1

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DRAFT

Mr. Glen L. Sjoblom, Director
Office of Radiation Program - ANR-458
U.S. Environmental Protection Agency
Washington, D. C. 20460

Dear Mr. Sjoblom:

We have made a staff level review of the material provided at our meeting on January 21, 1983 concerning your efforts to develop standards for radioactive materials under the Clean Air Act Amendments of 1977. Your present draft proposes a standard of 10 mrem/yr to any individual or any organ of an individual from atmospheric release of radioactive materials from non-uranium fuel cycle facilities licensed by the Nuclear Regulatory Commission (NRC). Normal operations in the uranium fuel cycle would continue to be regulated under 40 CFR Part 190 standards promulgated by the Environmental Protection Agency (EPA), and the appropriate NRC implementing regulations.

We agree that dose standards are a means of establishing appropriate emission standards while avoiding the need for extremely complex regulatory control provisions and requiring extensive resources to implement because of the wide variety of facilities and radioactive materials used or generated by NRC licensees. Standards that are related to dose offer the opportunity to more directly address public health concerns, namely radiation exposure. Such standards are consistent with not only the traditional practices of radiation protection but also with NRC's Standards for Protection Against Radiation (10 CFR Part 20). Our further recommendation is that the dose value selected should be for whole body dose equivalent or its risk equivalent, e.g., effective dose equivalent, where specific organs are involved.

We note that the 10 mrem dose level selected for the standard is too low to be measured directly in the environs of the facilities. It does not appear that there is any practical means for demonstrating compliance with this standard by direct routine measurements. Based on our experience with the implementation of 10 CFR 50, Appendix I, and 40 CFR 190, which are at similarly low levels, we consider that practical implementation of the proposed standard would have to be based on a review of the control methods used by a licensee and their effectiveness as determined by generic assessments. Pursuant to our discussion, I am enclosing a redraft of Section III.F., Implementation of the Proposed Standards, with suggested wording.

ENCLOSURE B

ATTACHMENT QUESTION 4(d) - 2

DRAFT

Our initial reaction to the 10 mrem level suggested for the standard is that it might be costly without offering commensurate benefit to public health. While it might be argued that most current plants are generally operating within the proposed standard, this is accomplished through the application of the ALARA principle. It allows some flexibility for implementation and does not require the extensive case by case analysis as would be required to demonstrate compliance with such a low limit. The limit of 10 mrem could also stifle innovative applications of nuclear activities.

We will be pleased to further discuss our views and any responses you have to offer. Frank J. Arsenault, Director, Division of Health, Siting, and Waste Management, Office of Nuclear Regulatory Research will continue to coordinate NRC's participation in this important EPA undertaking.

Sincerely,

Robert B. Minogue, Director
Office of Nuclear Regulatory Research

Enclosure:
Section III.F. redraft

REDRAFT

F. Implementation of the Proposed Standards

For NRC-licensed facilities, NRC will implement and enforce the standards subject to EPA oversight, as is specified in a Memorandum of Understanding between EPA and NRC (45 FR 72980). Implementation will follow the established NRC practice which is based on a review of the control methods used by a licensee and their effectiveness as determined by generic assessments.

For non-DOE Federal Facilities, EPA will implement and enforce the standards.

QUESTION 4 (e) Recognizing that EPA has yet to propose standards for NRC-licensed facilities, please summarize the Commission's views on the implications of an EPA emission standard on the order of 10 to 50 mrem for all NRC-licensed facilities other than uranium fuel cycle facilities. In particular, would such a standard provide a level of protection beyond that currently provided by the NRC? If so, please be specific as to the expected reduction in early fatalities and genetic effects. What additional requirements would such a standard impose on (1) the Commission, and (2) affected licensees, in order to verify compliance? Please estimate the additional cost, if any, to demonstrate compliance with such a standard.

ANSWER.

EPA has done calculations that indicate existing NRC licensed facilities, operating to hold effluents as-low-as-reasonably-achievable (ALARA) under the provisions of NRC regulations, would generally meet a standard set at the level of 10-50 mrem. However, the application of the ALARA principle under the provision of NRC regulations provides flexibility to deal with occasional situations that might fall outside the proposed limits. While the establishment of a standard at these levels would limit or eliminate the flexibility provided by ALARA, the added level of protection afforded is somewhat speculative.

With respect to the added requirements and cost to be imposed on the Commission and affected licensees, this is almost totally dependent on the means that are to be used to demonstrate compliance. As we have noted to the EPA, the 10 mrem dose level suggested for the standard is too low to be measured directly in the environs of the facilities. Even at levels 5 to 10 times that level, the uncertainties associated with measurements and calculational methods could make analytical proof of compliance technically difficult and very costly. We have suggested that practical implementation of the proposed standard might be achieved based on a review of the control methods used by a licensee and a generic assessment of their effectiveness. In view of the broad spectrum of possible means of implementation and the wide variety of licensed activities that would be covered by the proposed EPA standard, it does not seem feasible to offer meaningful cost or impact assessments.

Another factor, not yet explored fully with the EPA, relates to the formulation of the standard. NRC staff have suggested that the standard be expressed in terms of whole body dose equivalent or its risk equivalent, e.g., effective dose equivalent, where specific organs are involved. The decision on this and related matters will have a very significant effect on the technical factors and costs involved in implementation.

We have indicated to EPA that, in view of the very tight schedule the court order imposes (i.e., by March 29, 1983), we believe these various issues can be effectively dealt with during the course of development of the proposed standard and need not delay publication for public comment.

QUESTION 5. What administrative steps have been taken by the Commission since March 25, 1981 with regard to the licensing process? Please provide a complete summary of all policy statements and regulations issued by the Commission since March 25, 1981. What additional administrative steps are currently under consideration?

ANSWER.

A. Policy Statements and Regulations Adopted

The Commission issued a Policy Statement providing guidance to the Licensing Boards on the need for the balanced and efficient conduct of all phases of the hearing process.

The Commission modified the immediate effectiveness rule providing that low-power OL's may be issued immediately upon receipt of a favorable decision authorizing low power operation by a Licensing Board. Full-power OL's remain subject to effectiveness review by the Commission itself, a review which is intended to be completed within 30 days barring complications after the issuance of a decision by a Licensing Board authorizing full power operation.

The Commission adopted a regulation which precludes consideration of alternative sites under NEPA in operating license proceedings.

The Commission issued guidance to Licensing Boards on their authority to raise issues sua sponte.

The Commission directed Licensing Boards to attempt where possible to set hearing schedules so that the Boards would issue initial decisions within 300 days after the publication of the last staff safety evaluation report that is issued prior to the commencement of the hearing.

The Commission adopted several changes to the Commission's rules of practice. (These changes authorize Licensing Boards to make oral rulings on written motions during the course of a prehearing conference or a hearing, preclude parties from filing responses to objections to a pre-hearing order unless the Licensing Board so directs, revise the schedule for filing proposed findings of fact and conclusions of law, authorize the Licensing Boards to require service of documents by express mail, permit summary disposition motions to be filed at any time during the course of a proceeding, and authorize the Licensing Boards to require responses to motions to compel answers to discovery requests be made orally in a conference telephone call rather than in writing.)

The Commission adopted a regulation which generally eliminates need for power and alternative energy source considerations under NEPA in operating license proceedings.

The Commission adopted regulations eliminating financial qualification reviews and findings for utilities that are applying for construction permits or operating licenses for production or utilization facilities.

QUESTION 5.

B. Expanded Resource Commitments

The NRC also took a number of internal management measures which were intended to improve the utilization of existing agency resources for the timely completion of the staff's technical reviews. From March 1981, through July 13, 1981, staff members of the Office of Nuclear Reactor Regulation (NRR) and certain staff members of the Office of the Executive Legal Director (ELD) were on a mandatory overtime work schedule. In order to free NRR personnel to perform technical reviews on licensing cases, some other NRR projects of lower priority were delayed. Personnel were transferred to NRR from other offices within the agency to assist in reviewing casework, and some NRR assignments were delegated to other NRC offices. Personnel ceilings for NRR and ELD were also raised.

Additional funds were also provided for technical assistance. The National Laboratories were asked to perform additional technical assistance work in connection with case reviews, as well as assignments not related to casework. Contracts have been let with commercial firms for technical assistance with casework. These actions have resulted in making more NRR staff time available for in-house operating license reviews.

The Commission also expanded the Atomic Safety and Licensing Board Panel. Eight full-time administrative judges were added to the Panel as well as one part-time administrative judge. Two administrative law judges, five law clerks, and additional support staff were also hired. In addition, delay created by scheduling conflicts were eliminated by reconstituting approximately half of all the Licensing Boards.

C. Proposals Under Consideration

Additional administrative steps are currently under consideration to improve the efficiency of the licensing process. In November 1981 the NRC established a Regulatory Reform Task Force to review the agency's licensing process. The committee was charged with developing a proposed legislative package as well as proposals that could be implemented through rulemaking or policy statements. A Senior Advisory Group consisting of the General Counsel, the Director of the Office of Policy Evaluation, the Chairman of the Atomic Safety and Licensing Appeal Board, the Executive Director for Operations, and the Chairman of the Regulatory Reform Task Force, was formed to assist the Chairman of the Commission in the review of the Task Force proposals. In addition, in March 1982, the Ad Hoc Committee for Review of Nuclear Reactor Licensing Reform Proposals was formed. This committee was made of representatives from industry, public interest groups, and state governments. It provided the Commission with two reports on the legislative proposals developed by the Task Force. A comprehensive legislative proposal was placed in the Federal Register for public comment in June 1982. After reviewing the public comments and the reports of the Ad Hoc Committee, the Commission submitted proposed licensing reform legislation to Congress on February 22, 1983.

In November of 1982, the Regulatory Reform Task Force submitted rulemaking proposals to the Commission. Those proposals pertain to backfitting standards, the role of the staff in the licensing process, staff communications to the Commission, and proposals to make the licensing process more efficient. Those proposals are currently being reviewed by the Ad Hoc Committee and reports from that body are expected in March and April. Thereafter the Commission will take action on these proposals.

QUESTION 6. Please summarize the Commission's plans with respect to research in the area of the radiological source term for release from containment. What steps does the Commission plan to take to ensure that the work currently underway receives ample peer review?

ANSWER.

During the past two years the NRC has developed significant attention to the question of the magnitude, timing and species of radionuclide releases to the environs (source terms) under light water reactor (LWR) accident conditions. The Commission directed its staff to prepare an assessment of the technological bases for accident source terms, which was published in June 1981 as NUREG-0772. Following publication of this report, the NRC staff has initiated a program to further develop the data base given in NUREG-0772 as well as to initiate its application to several representative LWR plants. The Office of Research will give high priority to the development of this effort as well as a plan for timely consideration of its results by the Commission to assure that source term related results are implemented in a timely manner and consistent with Commission guidance.

The staff's contractor, Battelle-Columbus Laboratories, using the latest available analytical modeling techniques and integrating all available experimental data, will evaluate accident source terms associated with severe accident sequences that are considered to dominate the risk. Results will be prepared initially as several draft reports covering, respectively, a large dry pressurized water reactor (PWR) containment, two boiling reactor (BWR) containments, and an ice-condenser containment. Each of these draft reports will be subjected to extensive peer review. A peer review of the first of these draft reports was held on January 25-26, 1983 in Washington, D.C. The peer reviews (see attached listing) consisted of a broad cross-section of experts in the U.S. as well as foreign nuclear experts encompassing universities, national laboratories, reactor vendors, utilities, architect-engineers, private consultants and public interest groups. The contractor is presently revising this report to incorporate these comments. The Commission believes the peer review process to be essential, that it has substantially improved the work performed, and intends to subject each of the reports as well as the final report to a similar searching review.

ATTACHMENT QUESTION 6 - 1

INVITED MEMBERS:

R. Potter, UK/England
D. H. Walker, Offshore Power Systems
R. Vogel, EPRI
R. Ritzman, SAI
R. Hilliard, HEDL
C. Johnson, ANL
D. Cooper, Harvard Air Cleaning Lab.
A. W. Castleman, Penn State University
D. Rowe, Consultant
D. Torgerson, Atomic Energy of Canada Limited
W. Kastenberg, UCLA
A. Reynolds, Univ. of VA
L. Zumwalt, NCSU
F. Von Hippel, Princeton Univ.
S. Levy, Consultant

INVITED OBSERVERS:

J. Matuszek, NY State Board of Health
D. Campbell, ORNL
S. Niemczyk, ORNL
T. Kress, ORNL
R. Wichner, ORNL
G. Parker, ORNL
S. Loyalka, University of Missouri
W. Stratton, Consultant
L. Baker, ANL
L. Neimark, ANL
T. Ginsburg, BNL
D. Powers, SNL
R. Elrick, SNL
A. Postma, Benton City Technology
K. Winegardner, Battelle PNL
P. Owczarski, Battelle PNL
C. Pelletier, SAI
R. Hobbins, INEL
D. Croucher, INEL
R. Sherry, NUS
H. Kouts, BNL
J. Kelley, U. of Virginia
J. Scott, LASL
J. Gieseke & Staff, BCL
R. Denning & Staff, BCL
K. Canady, Duke Power
L. E. Mills, Edison Elec.
C. Thomas, Yankee Atomic
I. Haas, LI Lighting
P. Karatzas, Boston Edison
G. Wagner, Commonwealth Edison
J. Lentsch, Portland, Gen. Elec.
W. Hopkins, Bechtel (Gaithersburg)
R. Smith, Bechtel (San Fran.)

INVITED OBSERVERS (CONT):

ATTACHMENT QUESTION 6 - 2

J. Herceg, ANL
P. Dunn, ANL
J. Griffith, DOE
W. Lowenstein, EPRI
A. Buhl, IDCOR
E. Warman, Stone & Webster
K. Holtzclaw, GE
Mr. Rahe, W
A. Scherer, B&W
G. Thompson, Union of Concerned Scientists
T. Cochran, Natural Resources Defense Council
J. Siegel, AIF
F. Tooper, DOE/HQ
M. Stamatelatos, GAC
R. Burns, EDS Nuclear
F. Abbey, England
G. Petrangeli, Italy
K. Johansson, Sweden
S. Katsuragi, Japan
H. Rininsland, Germany

QUESTION 7: Has the Commission reviewed the record in the recently-completed litigation between General Public Utilities and Babcock and Wilcox? If so, has the Commission discovered any discrepancies between the record in this case and the Commission's earlier investigation of the Three Mile Island accident? Of what significance, if any, are the discrepancies?

ANSWER:

The NRC staff is conducting a review of the B&W/GPU trial court record to determine whether the NRC's understanding of the accident is significantly affected. No conclusions have been reached as to whether the record presents information which would significantly affect the Commission's understanding of the accident. While not a discrepancy with previous investigations, potentially significant information has been identified concerning the technical adequacy of small break loss of coolant and natural circulation procedures. The significance of this information is being evaluated by the NRC staff.

QUESTION 8. What steps has the Commission taken to prevent the recurrence of incidents such as the recent "Ray Miller Case?" Is existing statutory authority sufficient, in the Commission's judgment, to enable the Commission to address this type of case effectively?

ANSWER.

The Commission has taken and is planning a number of actions to prevent the recurrence of incidents such as the Ray Miller, Inc. case. These actions include the following:

a. The Commission has alerted all holders of a nuclear power reactor or fuel facility operating license or construction permit of the potentially significant problem pertaining to fraudulent products that may have been sold to nuclear industry companies by Ray Miller, Inc. This notification was made by IE Information Notice No. 83-01 and was issued on January 26, 1983. Additionally, a letter was sent on the same date to the chief executive officer of each utility that holds a construction permit or operating license for a nuclear power plant. The letter addressed quality assurance programs in general and included information about unapproved fittings provided by Tube Line Corporation as well as the fraudulent practices of Ray Miller, Inc.

b. The Commission is planning to require specific actions on the part of licensees that have received suspect materials from suppliers. These actions will be specified and imposed through the issuance of an IE Bulletin.

The actions identified in (a) and (b) will emphasize to the industry the need for adequate quality assurance programs which cover both American Society of Mechanical Engineers (ASME) code and non-code suppliers. Ray Miller, Inc. was a non-code supplier, i.e., did not hold a code certification.

c. The Commission is currently conducting investigations and reactive inspections of a number of material suppliers. These activities were initiated as a result of material deficiencies that were identified through licensee and vendor quality assurance programs.

d. Applicable industry codes and standards are currently being reviewed to determine whether changes should be recommended in light of recent problems with material suppliers.

e. Based on evaluation of the findings resulting from current investigations and reactive inspections of material suppliers, the Commission will review whether changes to NRC Regulations, applicable to licensees, are needed.

f. A procedure for routine NRC inspection of a sample of material suppliers such as Ray Miller, Inc. will be developed for implementation.

In addition, the Nuclear Regulatory Commission (NRC) and the Federal Bureau of Investigation (FBI) have a formal Memorandum of Understanding (MOU) which

QUESTION 8.

deals with, among other things, the exchange of information relating to threats, theft, or sabotage pertaining to the U.S. nuclear industry. Complementing this MOU is overall FBI policy which dictates that vital and important information received by the FBI, either through investigation or otherwise, is to be disseminated to justifiably entitled Government agencies. The FBI is not permitted to disseminate information occurring before a Federal grand jury, it is the responsibility of the appropriate U.S. Attorney's office to seek court release of the information to NRC. In all of these situations, NRC relies on the ability of the Department of Justice (DOJ) and the FBI to recognize potential public health and safety issues which necessitate referral to NRC. Disseminated information confidential to the FBI and/or DOJ, is most often protected by the deletion of identifying data and/or the use of paraphrasing.

The Chairman of the NRC and the Director of the FBI have discussed this matter. The staffs of both agencies will consider the need to revise our MOU to help ensure that information discovered in FBI investigations that is significant to the NRC regulatory mission is promptly brought to our attention. We will also look into the need to develop similar procedures for interacting with the Department of Justice with regard to matters under Grand Jury consideration.

In regards to the question of whether existing statutory authority is sufficient, we submit the following:

a. The statutory authority that currently exists is sufficient for regulating licensee's quality assurance programs and activities. However, most material suppliers, such as Ray Miller, Inc., are not NRC licensees. Under existing statutory authority, the Commission has imposed 10 CFR 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants. Under these regulations, each licensee is required to establish and implement a quality assurance program which satisfies the criteria of 10 CFR 50, Appendix B. The licensee is required to retain responsibility for any part of the quality assurance program delegated to a contractor or vendor, such as Ray Miller, Inc. Where such delegation occurs, the licensee is required to include applicable requirements of his quality assurance program in the work procurement document. This would include provisions to assure that vendor or contractor purchased items also conform to the appropriate requirements.

b. The Commission has promulgated 10 CFR Part 21 "Reporting of Defects and Noncompliance" under the authority of section 206 of the Energy Reorganization Act of 1974 for the purpose of being notified about certain defects and noncompliances. However, experience has shown that amendments to section 206 may be desirable to enhance the Commission's authority in this area. It may also be desirable to clarify the authority to inspect a nonlicensee involved in the manufacturing of certain components for licensed facilities. Recommendations are currently being developed for these amendments. At the same time it should be recognized as stated in paragraph (a) that licensees are responsible for the quality of components in their facilities.

QUESTION 8.

ADDITIONAL VIEWS:

Commissioner Asselstine notes that the Commission's present authority to adopt requirements governing the work of nuclear suppliers such as Ray Miller, Inc., and to take enforcement actions against such firms for violations of those requirements, may be quite limited. He believes that the limits on the Commission's present authority might hinder the Commission's ability to take all the actions that may be needed to prevent the recurrence of incidents such as the Ray Miller, Inc. case. He notes that our General Counsel is now preparing an analysis of the Commission's existing authority and the need for additional statutory authority in this area.

QUESTION 9. Please provide a detailed summary of actions taken by the Commission in response to the recent incident at the Salem Unit No. 1 facility involving failure of the reactor trip breakers to open on automatic trip signal. In addition, please submit a summary of information submitted by licensees in response to IE Bulletin No. 83-01.

ANSWER.

The NRC response to the Salem 1 event of February 25, 1983 consists of short term and long term actions. The short term response involved obtaining assurance of adequate corrective actions at Salem 1 and issuance of a bulletin to all operating pressurized water reactor facilities.

Short Term Actions

NRC personnel visited the Salem plant on February 26, 1983 to obtain first hand knowledge concerning the event. Public Service Electric and Gas (PSE&G) met with the NRC staff on February 28, 1983 and proposed corrective actions. These actions were confirmed by letter (Ref. 1) and include the following:

- PSE&G verified Salem surveillance testing meets technical specification requirements.
- Maintenance procedures for the undervoltage (UV) trip devices will be developed based on the current Westinghouse procedures.
- Westinghouse (W) will install new Unit 1 UV attachments.
- Proper operation of the breakers will be verified by PSE&G and W. After installation PSE&G will test the breakers after future maintenance on the breaker.
- W will verify that the UV attachments meet safety classification specifications for the original RX switchgear.
- Surveillance of breaker operation will be increased.
- Procedures will be revised to require the operator to actuate the reactor manual trip switch following an automatic reactor trip.
- PSE&G will develop a formalized post trip review procedure
- A review is in progress at Salem of past equipment failures documented in LER's, (deficiency reports). A preventive maintenance program will be implemented based upon results of review.
- Work orders will be reviewed by Quality Assurance to ensure that there is proper classification of safety-related items.

QUESTION 9.

On February 25, 1983 NRC issued Inspection and Enforcement Bulletin 83-01 (IEB 83-01) to all power reactor facilities. The bulletin described the event at Salem 1 and required certain preventative actions of all pressurized water reactor licensees with undervoltage devices similar to those at Salem 1 (Westinghouse DB Type breakers). The actions required by the bulletin were:

- Test undervoltage trip function within 24 hours if not tested within 5 days.
- Review maintenance program and conform to W program or alternate.
- Notify all licensed operators of the Salem event, and review emergency procedures for failure-to-trip with each operator on his arrival on shift.
- Report to NRC within 7 days.

Preliminary information obtained orally from the industry indicates that similar scram braker UV relays are installed at all operating Westinghouse PWR's except Farley 1&2, McGuire 1&2 and Summer 1; and that Combustion Engineering, General Electric and Babcock and Wilcox plants do not use the DB type breakers in their reactor protection systems, although they do use UV relays and study of that fact is underway. The staff has also preliminarily reviewed the results of the testing required by the bulletin. No other failures have occurred during testing to date. The NRC staff has also contacted other government agencies and INPO to inform them of the event. It was requested of INPO that the event be entered on "Note Pad" for wide dissemination.

The Salem 1 unit will remain shutdown until the NRC completes its review of the corrective measures relating to the reactor protection system at Salem. Salem Unit 2 is in a refueling shutdown and corrective actions will be taken to restart.

Long Term Actions

The longer-term actions resulting from the event include generic actions by the NRC staff, the Westinghouse Owners group and its Regulatory Response Group and Westinghouse.

QUESTION 9.

The actions of the Westinghouse Owners Group (WOG) and the Regulatory Response Group (Reference 3) were presented to the NRC staff at the February 28 meeting and include the following:

- A listing of current Westinghouse Technical Bulletins and Data Letters will be provided to all Westinghouse utilities by March 31, 1983.
- The WOG will evaluate adequacy of the current surveillance, testing and maintenance requirements of the Reactor Protection Systems in Plant Technical Specifications by June 30, 1983.
- WOG will evaluate the effectiveness of initiating a Manual Reactor Trip upon receipt of an Automatic Trip Signal by April 15, 1983.
- WOG will advise all Westinghouse NSSS's to conduct an evaluation of the potential of similar failures or similar equipment in other plant systems.

Westinghouse Electric Company has formed a task force to address potential corrective measures. These initial actions (Reference 4) include the following:

- A review of current methods for dissemination of this information to utilities.
- A thorough evaluation and testing of the Model BD-50 breaker undervoltage coil trip attachment. (Completed by about Sept. 1983)
- Development of procedures for the various Westinghouse protection system designs that will independently test the two separate trip features on the Model DB-50.

The NRC actions (Reference 2) will involve all of the PSE&G, WOG and Westinghouse activities and will include a task force evaluation, organized by the Director, NRR, to determine:

- The extent to which similar equipment is used in other facilities.
- The extent to which proper surveillance and maintenance of such equipment has been adhered to.
- The effect quality classification may have had on the malfunction.
- Identify any changes that are needed in license and/or procedural requirements at any affected facilities
- Report is scheduled to be issued to the Commission by April 18, 1983.

QUESTION 9.

Finally, your question requested that our response include a summary of the information received from licensees in response to IE Bulletin 83-01. Although the responses to the Bulletin are not due until after this answer was prepared, the preliminary information received as of March 3, 1983, indicates that testing has been completed and no failures have been found. Plants that are presently shutdown will test prior to their return to power. The information regarding the conformance of plant maintenance procedures with Westinghouse recommendations, results of maintenance activities, and operator notification of the event is not yet available. We hope that the information provided meets your needs. If you desire further information before it becomes available in published NRC documents on the issue, please contact us.

Reference 1 - Ltr Richard A. Uderitz, V.P. PSE&G, dtd 3/1/83 to D. G. Eisenhut

Reference 2 - Memo from W. J. Dircks to H. R. Denton, dtd 2/28/83

Reference 3 - Ltr from CP&L, Mr. Sheppard to H. R. Denton, dtd 3/1/83

Reference 4 - Ltr to H. R. Denton fm E. P. Rahe, Manager, Westinghouse Elec. Corp.

QUESTION 9. - Reference 1

Richard A. Uderitz
Vice President -
Nuclear

Public Service Electric and Gas Company P.O. Box 236, Hancocks Bridge, NJ 08038 609 935-6010

G. Lainas

March 1,1983

Director of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. Darrell G. Eisenhut, Director
Division of Licensing

Gentlemen:

REACTOR TRIP BREAKER FAILURE
NO. 1 UNIT
SALEM GENERATING STATION
DOCKET NO. 50-272

The purpose of this letter is to document our investigation of two reactor trip breaker failures and provide corrective actions to be taken.

On February 22 and 25, 1983, the Salem Unit 1 reactor trip breakers failed to open upon receipt of a valid trip signal from the reactor protection system. In both instances, the manual trip was used to shut down the unit.

PSE&G has determined that the reactor trip breaker undervoltage trip attachment failures were caused by a lack of proper lubrication on the latch. Westinghouse expert opinion concurs with this based upon:

a. An inspection of the undervoltage trip attachments.

b. A review of PSE&G accounts of the tests performed after the failures.

c. Previous Westinghouse experience which indicates that the lack of lubrication has been the cause of similar previous failures.

QUESTION 9. - Reference 1

Mr. Darrell G. Eisenhut
U. S. Nuclear Regulatory
Commission

3-1-83

G. Lainas

As presented in our meeting on February 28, 1983, our investigation of these incidents is summarized herein.

PSE&G has reviewed the plant data from the events of February 22 and 25, 1983 to evaluate any potential safety impact on the primary system. Review of the primary coolant parameters did not reveal any significant perturbations and followed trends that would be expected in a normal plant trip.

The bounding case in the FSAR is the loss of normal feedwater at 102% power with only one auxiliary feedwater pump starting. In that transient, two steam generators boil dry and the other two drop to a level where approximately 50% of the tube bundles are exposed. This provided sufficient heat removal to preclude boiling in the primary system. This is a more limiting case than the two recent incidents at Salem, where on February 22nd as a result of the transient, the water level in three steam generators briefly dropped to a level equivalent to approximately 20% of the tube bundle exposed. On February 25th, the level in one steam generator again briefly dropped to approximately this same level. On both occasions, there was automatic auxiliary feedwater initiation.

The potential for waterhammer in the steam generator feed ring exists when the feedwater flow is interrupted long enough to allow the feed ring to drain. In both recent instances, there was no flow interruption since auxiliary feedwater was initiated automatically. In addition, "J-tubes" have previously been installed in the feed rings.

In conclusion, the events of February 22 and 25, 1983 were within bounds of FSAR analyses and did not have the necessary prerequisites for feedwater line waterhammer.

Our review of the breaker failures has resulted in a program of corrective actions to assure that such failures will not recur. These corrective actions are described below:

1. PSE&G has verified the Salem surveillance testing meets the technical specification requirements.

   Procedure PD18.1.004/5 Solid State Protection System Reactor Trip Breakers and Permissive P-4 Test Train A/B satisfy the requirements for testing the reactor trip breakers.

QUESTION 9. - Reference 1

Mr. Darrell G. Eisenhut
U. S. Nuclear Regulatory
Commission

3-1-83

Procedure PD18.1.008/9 Solid State Protection System Functional Test Train A/B satisfied the requirements for testing the automatic trip logic.

2. A detailed maintenance procedure M3Q-2 entitled Reactor Trip and Bypass ACB Inspection and Test, which includes the undervoltage trip attachment, has been developed and approved. This procedure is based on and references Westinghouse data letter NSD-TB-74-2, Westinghouse Procedure NDC-ELEC-18 and the Westinghouse Instruction Book for DB-50, DBF-16 and DBL-50-ACB's. This includes electrical testing of the breaker, notification of the Technical Department of the need for post maintenance testing and appropriate QA inspection hold points.

3. New undervoltage trip attachments will be supplied by Westinghouse and will be installed on each of the four No. 1 Unit breakers. Westinghouse will provide technical assistance to PSE&G to assure that No. 1 Unit undervoltage trip attachments are installed properly and that the breakers operate properly.

4. Proper operation of the breakers will be verified prior to placing the breakers in service. A program to verify proper operation will be developed and completed prior to returning to service. This program will take into consideration statistical data and recommendations to be provided by Westinghouse.

5. PSE&G will verify that Westinghouse has determined that the UV attachments meet the specification requirements for the original reactor trip switchgear.

6. Surveillance of reactor trip breaker operation will be increased as follows:

   a. Main and bypass breakers will be shunt-tripped weekly.

   b. Main breakers will be UV-tripped monthly.

   Proposed technical specification changes will be submitted as appropriate.

QUESTION 9. - Reference 1

Mr. Darrell G. Eisenhut
U. S. Nuclear Regulatory
Commission

3-1-83

7. The following tests will be performed after maintenance on reactor trip breakers to demonstrate operability prior to return of the breaker to service:

   a. Breaker will be shunt-tripped.

   b. Breaker will be UV-tripped.

   c. Breaker will be time-response tested.

8. Emergency Instruction I-4.3, Reactor Trip, for Salem Units 1 and 2 will be revised to include the requirement to manually trip the reactor trip breakers on all reactor trips.

   The revision to this procedure and the basis for this additional action will be disseminated to all licensed operators.

9. A formal reactor trip/safety injection post trip review procedure will be developed and issued as an Operations Department Directive. This procedure will specify the review and documentation necessary to determine the cause of the event and also determine that affected equipment performed in its intended function. The procedure will also include management authorization requirements for startup. All licensed operators will be informed of the requirements of this document.

10. A review of LER's, deficiency reports, maintenance work sheets and work orders is in progress to identify items requiring preventative maintenance. Our preventative maintenance program will incorporate the results of this review to be completed by January 1, 1984.

11. A reactor trip and bypass breaker traceability program will be established to insure that all work performed on the breakers will be traceable to a particular breaker and its location. This will be accomplished by April 1, 1983.

12. Westinghouse has committed to provide PSE&G with a compilation of all technical bulletins, manuals, etc., pertaining to Westinghouse equipment utilized at Salem. These will be reviewed and incorporated into station documents as necessary in a timely manner.

QUESTION 9. - Reference 1

13. Work orders will be reviewed by QA to insure that there is proper designation of safety related items. For safety related work, QA will establish proper inspection and/or surveillance coverage.

    In addition, PSE&G is undertaking a thorough review of its Operational QA Program to identify changes necessary to improve performance.

In our meeting with the staff on February 28, 1983, we were requested to clarify the safety classification of the reactor trip breakers. The reactor trip breakers are part of the Reactor Trip System which is a safety-related system. In the design and construction of Salem Generating Station, PSE&G considered as safety-related, those structures, systems and components that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public.

Salem UFSAR Section 7.1.1.1 states that the Reactor Trip System consists of equipment which initiates reactor trip or activates engineered safety features. Included is equipment from sensors to actuating devices. The reactor trip breakers and the undervoltage attachment are safety-related. The shunt-trip attachment is not a functional part of the reactor trip system.

Corrective action Items 1 through 9 will be completed prior to startup. Corrective action Items 10 through 13 will be completed as described therein.

We believe that accomplishment of the corrective actions identified above will preclude recurrence of these and similar events and provide adequate confidence that Salem Unit 1 can be safely returned to service.

Sincerely,

R.A. Uderitz

QUESTION 9.

Reference 2

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

February 28, 1983

MEMORANDUM FOR: Harold R. Denton, Director, NRR

FROM: William J. Dircks
Executive Director for Operations

SUBJECT: EVALUATION OF THE IMPLICATIONS OF THE SALEM UNIT I EVENT

This memorandum confirms our conversation of February 28, 1983. I am establishing an NRC Task Force to undertake a review and evaluation of the implications of the Salem Unit I event.

You are appointed to organize that task force in order to develop criteria for the review and to prepare a final report. You should designate a senior member of the NRR staff to act as Chairman and a senior representative from appropriate Regional Offices, OIE, NRR and AEOD to be a member of the Task Force. Contact those offices directly to acquire mutually acceptable members. You are authorized to task NRC offices directly to accomplish this work. Offices are expected to give priority to this request unless they obtain relief from me.

Your review and evaluation shall include the extent to which similar equipment is used in other facilities, the extent to which proper surveillance and maintenance of such equipment has been adhered to, and the effect quality classification may have had on the malfunction. At the conclusion of this review and evaluation, I expect that you will identify any changes that are needed in license and/or procedural requirements at any affected facilities.

I request that you keep me advised of progress and difficulties encountered as necessary. A report should be scheduled for transmission to the Commission by April 18, 1983. Publication of the report should be in the form of a NUREG which provides adequate documentation to support any recommendations you may have.

By copy of this memorandum, Region-I is directed to provide you with a report by March 9, 1983 on the circumstances and details of the events that took place on February 22-25, 1983 and any relevant prior experience at the Salem Unit I facility during which the automatic scram system did not function properly.

William J. Dircks
Executive Director
for Operations

QUESTION 9. - Reference 3

6800 '00/03/19 04:48

CP&L
Carolina Power & Light Company

March 1, 1983

OG-90

Dr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Phillips Building
7920 Norfolk Avenue
Bethesda, Maryland 20014

Dear Dr. Denton:

Salem RT Breaker Incident

I represented the Westinghouse Owners Group (WOG) and its Regulatory Response Group (RRG) at the meeting held on Monday, February 28, 1983, among the NRC Staff, Westinghouse and Public Service Electric & Gas regarding the incident at the PSE&G Salem Unit 1 Station when the Reactor Trip Breakers failed to open on Automatic Trip Signal.

The WOG was notified of the incident on Friday, February 25, 1983. The individual members of the RRG were then immediately notified. The RRG later convened via conference call also on Monday, February 28, for the purposes of more thoroughly reviewing the incident, discussing IE Bulletin 83-01, and determining the appropriate generic measures which could effectively be undertaken by the WOG. These measures were subsequently presented to the staff at the above mentioned meeting. The purpose of this communication then is to document the actions initiated by the RRG on behalf of the WOG. These actions include the following:

1. An exhaustive listing of current Westinghouse Technical Bulletins and Data Letters issued to date including those which deal with NSSS safety systems and safety related components will be prepared. This listing will be provided to all utilities owning a Westinghouse NSSS no later than March 31, 1983. It will be the responsibility of the individual utility to verify receipt of the documents, their applicability, and implementation.

2. The Technical Specification Subcommittee of the WOG will evaluate the adequacy of the current surveillance, testing and maintenance requirements of the Reactor Protection Systems in Plant Technical Specifications. In particular, this evaluation will address the following areas:

411 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

QUESTION 9. - Reference 3

a) Adequacy of current surveillance intervals.

b) Validity of current RT Breaker Test Methods, i.e., Test Methods must assure proper system function.

c) Determination of methods for testing Breaker Shunt Coils and the desirability and real benefits of such a test.

It is requested that the NRC records of component reliability be made available to the WOG to assist in this evaluation. The results of the Technical Specification Subcommittee's study will be reported no later than June 30, 1983.

3. The WOG Emergency Response Guidelines which provide the basis for compliance with the Post-TMI Emergency Operating Procedures implementation requirements have been reviewed for Reactor Trip verification--including the ATWT procedure (ECA-1)--and found to be adequate.

4. The Procedures Subcommittee of the WOG will undertake an evaluation of the effectiveness of initiating a Manual Reactor Trip upon receipt of an Automatic Trip Signal. The Subcommittee is scheduled to meet on March 22, 1983. Their recommendation will be issued to the NRC sometime shortly thereafter, but no later than April 15, 1983. And finally,

5. The WOG will advise all utilities owning Westinghouse NSSS's to conduct an evaluation of their plants for the potential of similar failures with the same or similar equipment used in other plant systems. This advisory will be issued no later than Friday, March 4, 1983.

We thank you for the opportunity to meet with you to discuss this matter and offer our assurance that the WOG will continue to work closely with Westinghouse toward its timely resolution.

Very truly yours,

JJ Sheppard

J. J. Sheppard, Chairman
Westinghouse Owners Group

/pab

cc: WOG RRG Members

QUESTION 9. - Reference 4

Westinghouse Electric Corporation

Water Reactor Divisions

[illegible]

[illegible]

[illegible]

NS-EPR-2726

March 1, 1983

Dr. H. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Phillips Building
7920 Norfolk Avenue
Bethesda, MD 20014

Dear Dr. Denton:

In response to the recent events at the Salem Nuclear Plant in which the reactor protection system trip breakers (Westinghouse Model DB-50) failed to cause an automatic scram upon demand, Westinghouse sent representatives to the plant site to review the sequence of events and to investigate the possible cause of the failures.

Based upon inspection and maintenance information supplied by Public Service Electric and Gas personnel to a representative from the Westinghouse Low Voltage Switchgear Division concerning the undervoltage trip attachment and on a visual inspection of the device, data indicates the lack of proper lubrication either caused or greatly contributed to the failure of the device to function. Such data is consistent with prior occurrences at other utility sites as previously reported by the Westinghouse Technical Bulletin NSD-74-1 as amended by technical data letter NSD-74-2 issued in 1974 to utilities with Westinghouse Nuclear Steam Supply Systems.

Westinghouse Nuclear Safety Department has also determined that analyses of anticipated transients without scram (ATWS) previously submitted to the NRC Staff bound the events at the Salem Nuclear Plant and indicate that no threat was posed to public health and safety even if the event had occurred at full power.

Westinghouse has formed an interdivisional task force, chaired by a Division General Manager, that will address the following topics:

1. A review of current methods for distribution of technical information within the Westinghouse Corporation.
2. A review of current methods for dissemination of this information to utilities.
3. A thorough evaluation and testing program of the Model DB-50 breaker undervoltage coil trip attachment.

QUESTION 9. - Reference 4

The review of items (1) and (2) is expected to be completed within three weeks. The additional evaluation and testing of the Model DB-50 breaker undervoltage trip attachment will be completed within approximately three months.

In addition to this, Westinghouse is also reviewing the current maintenance recommendations for the DB-50 Reactor Trip Switchgear breakers to promote clarity and consistency in these recommendations. Any changes or clarifications that are deemed necessary will be distributed to the appropriate parties within approximately three weeks.

Other steps currently being taken include:

1. The development within approximately one week of procedures for the various Westinghouse protection system designs that will independently test the two separate trip features (undervoltage coil attachment and shunt coil attachment) on the Model DB-50 breaker to provide for additional reliability of the breaker function.

2. Distribution to the Westinghouse Owners Group of a listing of active Westinghouse technical information and recommendations that pertain to safety related equipment.

If you have any questions, please contact me (412-374-4868).

Very truly yours,

E. P. Rahe, Manager
Nuclear Safety Department

/keg

QUESTIONS SUBMITTED AFTER THE HEARING

QUESTION 1. In April of 1982, the Commission established a new Office of Investigations to improve the agency's capability to perform credible, thorough, timely and objective investigations.

(a) Has the Commission established the procedures that will govern the functions of this office?

ANSWER.

Yes. OI policies were adopted by the Commission during the month of January 1983. We have attached a copy of these policies for your information. Policy 6 has been held in abeyance pending receipt of the report of the Advisory Committee on Rights of Licensees Employees Under Investigation and a Commission decision on this policy.

QUESTION. (b) As I understand the functions of this office, it will be responsible for investigations of licensees, applicants, contractors, and vendors. Does the Commission intend to publish the procedures for this office, so that those who are subject to investigations will be fully informed of the responsibilities of this office?

ANSWER.

OI policies are placed in the Public Document Room as they are approved and issued by the Commission. Most of the implementing procedures of the Office of Investigations are directed at the specific investigatory methods or techniques utilized by an investigator in the conduct of an investigation, e.g., report format, administration of oaths, retention of evidence, etc., and are not routinely made available to the public. Nevertheless, proposed procedures such as these have been and will continue to be closely scrutinized by the Commission. On the other hand, certain subjects regarding investigations such as issuance of agency subpoenas, the agency's investigation authority, and sequestration of attorneys, are broader in scope and have been codified by various agencies with an investigative function in the Code of Federal Regulations. The Commission may consider the issuance of a separate Part to Title 10 of the Code of Federal Regulations addressing investigative items of a broader scope. If the Commission elects to go forward with these regulations, it will at that time also consider whether to solicit public comments on them.

QUESTION. (c) On March 9, 1983, the Commission informed the Subcommittee that "OI investigations will be conducted in accordance with general procedures and practices of other investigatory agencies." What are these procedures and practices? Please provide copies of all such procedures and practices applicable to the Office of Investigations for the record.

ANSWER.

OI Policy 2 provides that OI investigations will be conducted in accordance with general procedures and practices of other investigatory agencies. Included are those investigative rubrics which, although not codified, are common to all investigative organizations.

The following are examples:
- always schedule adequate time for interviews.
- conduct interviews in person whenever possible.
- select an interview location which will ensure a minimum of interruptions.
- be familiar with subject matter before conducting an interview.
- identify yourself and your organization.

QUESTION 2. According to your testimony submitted in response to my question on EPA's authority to regulate radionuclides under the Clean Air Act, you note that "the added level of protection afforded [by an EPA standard of 10 to 50 millirem] is somewhat speculative." Moreover, you have testified that "the uncertainties associated with measurements and calculational methods could make analytical proof of compliance [with an EPA standard of 10 to 50 millirem] technically difficult and very costly." In light of the limited benefits, if any, resulting from EPA regulation of NRC-licensed facilities, and the technical difficulty and expense of demonstrating compliance with such a standard, would the Commission support modification of the Clean Air Act to remove EPA's jurisdiction over radionuclides emitted from facilities regulated by the NRC?

ANSWER.

The Commission would support modification of the Clean Air Act to exclude from coverage those radioactive materials licensed by the NRC and by States under agreement with the NRC pursuant to the Atomic Energy Act. Such action by the Congress would not diminish the Federal record of protecting the public health and safety. However, it would help to avoid the potential for overlapping and inconsistent regulation under various Federal and state authorities and would make clear the responsibility of NRC to control all radioactive emissions, whether to air, earth or water.

[illegible]

SUGGESTED CHANGES TO THE CLEAN AIR ACT

1. Section 112(a) of the Clean Air Act is revised to read as follows:

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Sec. 112(a) For purposes of this section:

(1) The term "hazardous air pollutant" means an air pollutant to which no ambient air quality standard is applicable and which in the judgment of the Administrator causes, or contributes to, air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness. No radioactive substance regulated by the Nuclear Regulatory Commission, or by any agreement State under section 274 of the Atomic Energy Act of 1954 (42 U.S.C. 2021), and listed by the Administrator pursuant to this section prior to [insert date of enactment] shall be deemed a "hazardous air pollutant". *

2. Section 122(a) is revised and Section 122(c) is deleted to read as follows:

LISTING OF CERTAIN UNREGULATED POLLUTANTS

Sec. 122(a) Not later than one year after date of enactment of this section (two years for radioactive pollutants) and after notice and opportunity for public hearing, the Administrator shall review all available relevant information and determine whether or not emission of radioactive pollutants ([~~including~~] excluding source material, special nuclear material, and byproduct material regulated by the Nuclear Regulatory Commission or by any agreement State under section 274 of the Atomic Energy Act of 1954 (42 U.S.C. 2021)), cadmium, arsenic and polycyclic organic matter into the ambient air will cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health. If the Administrator makes an affirmative determination with respect to any such substance, he shall simultaneously with such determination include such substance in the list published under section 108(a)(1) or 112(b)(1)(A) (in the case if a substance which, in the judgment of the Administrator, causes, or contributes to, air pollution which may reasonably be anticipated

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* Additions are underscored. Deletions have dashes through the text.

to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness), or shall include each category of stationary sources emitting such substance in significant amounts in the list published under section 111(b)(1)(A), or take any combination of such actions.

* * *

(c)(1) ~~Before listing any source material, special nuclear, or byproduct material (or component or derivative thereof) as provided in subsection (a), the Administrator shall consult with the Nuclear Regulatory Commission.~~

(2) ~~Not later than six months after listing any such material (or component or derivative thereof) the Administrator and the Nuclear Regulatory Commission shall enter into an interagency agreement with respect to those sources or facilities which are under the jurisdiction of the Commission. This agreement shall, to the maximum extent practicable consistent with this Act, minimize duplication of effort and conserve administrative resources in the establishment, implementation, and enforcement of emission limitations, standards of performance, and other requirements and authorities (substantive and procedural) under this Act respecting the emission of such material (or component or derivative thereof) from such sources or facilities.~~

(3) ~~In case of any standard or emission limitation promulgated by the Administrator, under this Act or by any State (or the Administrator) under any applicable implementation plan under this Act, if the Nuclear Regulatory Commission determines, after notice and opportunity for public hearing that the application of such standard or limitation to a source or facility within the jurisdiction of the Commission would endanger public health or safety, such standard or limitation shall not apply to such facilities or sources unless the President determines otherwise within ninety days from the date of such finding.~~]

3. Section 302(g) of the Clean Air Act is revised to read as follows:

§ 302 Definitions

* * * (g) The term 'air pollutant' means any air pollution agent, or combination of such agents, including any physical, chemical, biological, radioactive ([~~including~~] excluding source material, special nuclear material, and byproduct material regulated by the Nuclear Regulatory Commission or by any agreement State under section 274 of the Atomic Energy Act of 1954 (42 U.S.C. 2021) substance or matter which is emitted into or otherwise enters the ambient air.

OI POLICY STATEMENTS

POLICY 1

OI will perform thorough, timely and objective investigations. This will include investigations of allegations of wrongdoing by individuals or organizations, other than NRC employees or NRC contractors, which are within the scope of NRC authority.

POLICY 2

OI investigations will be conducted in accordance with general procedures and practices of other investigatory agencies.

POLICY 3

OI investigators may be delegated authority to administer oaths or affirmations during the course of OI investigative efforts.

POLICY 4

OI investigations may be initiated at the request of the Commission, the EDO, or a Regional Administrator, or on the initiative of the Director, OI. The Director, OI, will promptly inform the Chairman of all investigations commenced by OI.

POLICY 5

The criteria established for initiating an inspection or an investigation do not preclude concurrent conduct of both types of activity.

POLICY 7

OI investigators may grant requests for confidentiality during the course of an investigation. NRC will respect an OI investigator's promise of confidentiality unless and until the interviewee's testimony is required for an administrative or judicial proceeding or the interviewee discloses the testimony. The identity of persons not subject to the reporting requirements of 10 CFR Part 21 who report to the Commission information addressed by that regulation will also be accorded confidentiality as required by 10 CFR 21.2.

POLICY 8

Investigators and others assigned to OI investigations shall identify, collect, and preserve evidence relevant to investigations which would have potential value in an enforcement or other proceeding. When necessary, OI may request orders or subpoenas to preserve or obtain such evidence.

POLICY 9

Investigators and others assigned to OI investigations shall attempt, when warranted by the importance to the investigations, to witness and/or photographically record the violation or condition that is the focus of the investigation.

POLICY 10

Investigators and others assigned to OI investigations will be alert for indications of deliberate violations of NRC regulations or Federal statutes and will pursue relevant leads. They will also make reasonable efforts to determine the extent of involvement or awareness by management of licensees, applicants, vendors or other entities in any instances of deliberate violation of NRC regulations or Federal statutes.

POLICY 11

Other NRC components will provide OI with timely legal and technical assistance consistent with its impact on the overall NRC mission.

POLICY 12

OI may use the investigative support of Federal, State or local agencies or other organizations during the course of OI investigations.

POLICY 13

The Office of Inspector and Auditor (OIA) shall be the primary office responsible for referral, and related discussions of investigative matters with the Department of Justice (including the U.S. Attorneys and the Federal Bureau of Investigation) Emergency situations requiring prompt field referral to the DOJ and/or FBI should be made without delay or consultation with OIA. Referrals for prosecution or investigation, inquiries or the transmittal of investigative information to these agencies shall be promptly documented in writing with copies provided to offices concerned.

POLICY 14

Investigative activity of OI may occasionally develop information within the jurisdiction of another agency. This information will be routinely provided to that agency under appropriate controls.

POLICY 15

OI shall keep NRC components which request OI investigations informed of significant developments in ongoing investigations.

POLICY 16

The requestor of an OI investigation and any NRC component aware of such ongoing investigation shall advise OI of any additional information it receives/develops during the pendency of the investigation.

POLICY 17

OI shall advise cognizant NRC components of safety issues discovered as the result of an ongoing OI investigation.

POLICY 18

With the exception of significant safety issues, information regarding an ongoing OI investigation will not be disclosed by any NRC employee outside NRC without the specific approval of the Director, OI, or his designee.

POLICY 19

Investigators and others assigned to an OI investigation or inquiry will normally not discuss the substance of ongoing OI inquiries and investigations with licensees or other non-NRC personnel in entrance or exit interviews, except safety items requiring immediate corrective action.

POLICY 20

Investigators will thoroughly and accurately document their investigative efforts and substantive information developed during investigation.

POLICY 21

OI investigative reports shall be in sufficient detail to permit an informed managerial review of the issues under investigation, and to permit an NRC determination as to the need for enforcement or other corrective actions.

POLICY 22

Reports of Investigation (ROI) prepared by OI investigators should contain an objective recitation of all relevant facts developed in the course of the investigation. They should not contain either the opinions or conclusions of the investigators. Opinions or conclusions of persons interviewed are permissible, however. In a memorandum transmitting the Report of Investigation to the NRC action office, OI management will normally include overall conclusions regarding what OI believes occurred in the matter investigated or its opinion as to the weight of the evidence. OI will not make a determination as to whether the occurrence constitutes a violation or furnish recommendations for enforcement/corrective action.

POLICY 23

OI reports of investigation, while in preparation or review, will not be circulated outside NRC without specific approval of the Chairman.

POLICY 24

OI reports of investigation, while in preparation or review, will normally not be circulated to other NRC offices. In those cases where OI perceives the existence of safety questions requiring prompt attention or determines that it would be of substantial benefit to the accuracy of the final report, OI may have other NRC officials review, and comment on pertinent portions of the report. Final OI investigative reports will be provided to the appropriate NRC officials.

POLICY 25

The Office of Inspector and Auditor retains responsibility for investigations regarding NRC employee and contractor misconduct and interal waste, fraud and abuse.

POLICY 26

OI shall be informed promptly by NRC employees of all allegations which involve wrongdoing, other than allegations of wrongdoing on the part of NRC employees or NRC contractors, which are the responsibility of OIA.

QUESTION 3. As the Commission knows, the Clean Air Act also confers authority on state and local governments to establish standards for emissions of radionuclides that are more stringent than those established by EPA. In addition, if emission standards prove impossible to establish, the Act gives state and local governments the authority to become involved in regulating the design and operation of these facilities. What are the implications of this authority for the NRC's regulatory activities in this field, and would a departure from the practice of uniform naticnal standards for these facilities adversely affect the NRC's ability to protect the health and safety and the environment?

ANSWER.

The potential for an adverse effect on the NRC ability to protect public health and safety and the environment would very much depend on the actual circumstances. Although no State has yet proposed radioactive emission limits for NRC licensed materials under the Clean Air Act, there is a clear potential for states to establish standards that differ from state to state and from Federal standards. Regulation of radionuclide emissions by individual states could not have the effect of relaxing standards established by the NRC. However, it would likely result in duplicative, overlapping and possibly inconsistent requirements being imposed on NRC licensees with the attendant potential for conflict and confusion arising in connection with inspection and enforcement. In view of the current EPA effort to propose standards, it seems unlikely that it will "prove impossible to establish" emission standards. However, should unforeseen events result in state and local governments regulating the design and operation of NRC licensed facilities, the necessary coordination by Federal, state and local governments will be very difficult to achieve and would likely require significant resources applied to non-productive activity simply to accomodate the various points of view. The resulting compromises would not necessarily be in the public interest and would likely affect the NRC ability to protect the public health and safety.

CUESTION 4. Section 112 of the Nuclear Waste Policy Act requires NRC concurrence in DOE's siting guidelines. As you note in your testimony, DOE issued draft guidelines for public review and comment, and the NRC staff is now reviewing the draft guidelines. The Act requires DOE to promulgate final guidelines by July 6, 1983. Do you expect to complete your review of the guidelines far enough in advance of this date to allow DOE to meet the deadline?

ANSWER.

The NRC staff is planning to comment on the proposed guidelines during the public comment period so that its concerns are known to DOE well in advance of the statutory deadline. NRC staff plans to work closely with DOE staff to achieve a satisfactory resolution of the NRC comments. Provided its comments are satisfactorily resolved by DOE in a timely manner to allow Commission review of the final guidelines, we expect to complete our review in time for DOE to meet the statutory deadline.

QUESTION 5. In your preliminary review of DOE's draft guidelines, have you come upon any issues about which you have serious concerns, or do you anticipate problems that might require extended negotiation with DOE?

ANSWER.

In their review of the DOE guidelines to date, the NRC staff has not identified any serious concerns that they would expect to require extended negotiations with DOE to resolve. Attached for your information are the staff comments.

Robert L. Morgan, Project Director
Office of Civilian Radioactive Waste
U.S. Department of Energy
Washington, D.C. 20545

Dear Mr. Morgan:

This letter and its attachment were prepared in response to your February 7, 1983 Federal Register notice (48FR5670) in which the Department of Energy (DOE) set forth its "Proposed Guidelines for the Recommendation of Sites for Nuclear Waste Repositories." Although the Nuclear Waste Policy Act of 1982 (Act) does not require the Nuclear Regulatory Commission (NRC) to submit comments on the proposed guidelines, we have decided to provide you with NRC staff views at this time to assist you in meeting the July 6, 1983 completion date specified by the Act. Since the public has been requested to comment on the proposed guidelines, the Commission will want to review the public comments and DOE's responses to those comments as well as the NRC's comments before rendering any decision on concurrence in the guidelines.

Based on our review of the proposed guidelines, the staff has drawn the following conclusions:

(1) The proposed guidelines appear to account for the siting factors described by the Act and, if applied properly, the guidelines should lead DOE to identify sites that would be reasonable candidates for license applications.

(2) While the wording in the proposed guidelines and the proposed 10 CFR Part 60 differ on occasion, it appears that the documents are compatible. However, the staff requests that DOE explain and clarify any differences between 10 CFR Part 60 and the guidelines. This could be accomplished by an early meeting between our staffs.

(3) The proposed guidelines do not make clear either how or when the guidelines will be applied at various decision points in the repository siting program specified in the Act. It is requested that DOE clarify this matter in the final guidelines.

The Federal Register notice on the proposed guidelines is divided into two parts: (1) a section entitled Supplementary Information; and (2) the regulation itself (10 CFR Part 960). The regulation (or guidelines) is further divided into three sets of guidelines: (1) system guidelines; (2) program guidelines; and (3) technical guidelines. Our detailed comments, attached to this letter, follow the format used by DOE in the Federal Register notice of February 7, 1983.

I hope these comments will assist you in developing your final guidelines. The NRC staff is available to discuss these comments with DOE at any time.

Sincerely,

ORIGINAL SIGNED BY

Robert E. Browning, Acting Director
Division of Waste Management

Comments on the

Proposed 10 CFR Part 960

"Nuclear Waste Policy Act of 1982;

Proposed General Guidelines for Recommendations

of Sites for Nuclear Waste Repositories"

(48 FR 5670)

February 7, 1983

Submitted by
The Division of Waste Management
U. S. Nuclear Regulatory Commission
April, 1983

Comments on the Supplementary Information (pp. 5670-5676)

1. p. 5670-5671. I. Background, Paragraph 6.

It is our understanding that the DOE site selection process consists of three principal steps: (1) nomination of at least five sites that DOE determines suitable for site characterization; (2) recommendation of three sites to the President for characterization as candidate sites; and (3) recommendation that the President approve a site for development as a repository. It is not entirely clear in the guidelines how DOE will apply the guidelines at each of these steps.

Nomination of Five Sites

DOE states, in the supplementary information to 10 CFR 960, that the "siting guidelines will be used to identify and nominate sites for characterization". DOE plans to nominate five sites during the summer of 1983. If the words "identify and nominate" mean that DOE will use the guidelines to search for sites, then the proposed timing of the site nominations and the publication of the siting guidelines are incompatible. On the other hand, if the intent of guidelines is that they be used as a technical standard against which sites can be judged rather than a search technique to find sites, then the proposed schedules for the nomination of sites and publication of the final guidelines appear to be compatible. DOE should, however, clarify the intent of the guidelines in this regard.

Recommendation of Three Sites for Characterization

Under the provisions of the Act, DOE will select three sites for characterization out of the five sites that are nominated. DOE anticipates making these selections during the summer of 1983. It is not clear in the Act or in 10 CFR 960 if DOE will use these guidelines in the process of selecting the three sites for characterization. It is suggested that DOE's program guidelines explain how DOE will select three sites for characterization out of the five that are nominated and what role the guidelines will play in this selection.

Recommendation of First Repository Site

After DOE has characterized three sites, the Act appears to require DOE to use the guidelines at two decision points: (1) a recommendation that the President approve one of the three sites for development as a repository (Sec. 114(a)); and (2) a preliminary determination that the three alternative sites, that will be considered in an environmental impact statement, are suitable for development as repositories (Sec. 114(f)). DOE should state in its program guidelines, how it intends to implement the provisions of Section 114(a) and Section 114(f) of the Act.

2. p. 5671-5672, II Description of Proposed Action, A. Introduction

The Act states that the guidelines "shall specify factors that qualify or disqualify any site from development as a repository" (SS 112(a)). In carrying out this requirement, DOE states that the guidelines include "favorable and potentially adverse conditions to supplement the qualification and disqualification factors."

DOE has identified ten disqualifying factors but has not identified the qualifying factors. The NRC staff would suggest that DOE identify the qualifying factors.

3. p. 5672, II Description of Proposed Action, B. Rationale for Systems Guidelines

The rationale for the systems guidelines should explain the relationship between the EPA standard (40 CFR Part 191) and the NRC regulations for the disposal of high-level radioactive wastes in geologic repositories (10 CFR Part 60). In the case of a geologic repository that is subject to the requirements of 10 CFR Part 60, it should be recognized that the NRC implements the EPA standard through its requirements in 10 CFR Part 60 specifically Sections 60.111(a) and 60.112. Thus, in complying with the NRC requirements (10 CFR 60), DOE is, in effect, complying with the EPA standard (40 CFR 191). It is suggested that 10 CFR Part 60 be referenced in the guidelines.

4. p. 5674, II.D.6. Human Intrusion

DOE states: "...the potential for human intrusion can be reduced by siting in areas where known concentrations of valuable minerals are limited..."

Groundwater could also be an incentive for human intrusion. The NRC staff recommends that "valuable minerals" be changed to "valuable natural resources." This change would permit adequate consideration of groundwater and would be consistent with the requirements of 10 CFR Part 60.

5. pp. 5675-5676, II.E. Application of Guidelines

DOE states, "At this stage, all of the guidelines are employed as a comprehensive set of standards against which suitability is measured." DOE should identify the "stage" in the repository development program that is being referred to.

Comments on Definitions (p. 5677)

6. p. 5677, Section 960.2-0 Definitions

DOE defines "aquifer" as, "a zone of rock below the surface of the earth that readily transmits water and is capable of producing water as from a well." (emphasis added)

The definition may require further clarification, since some of the most productive aquifers are nonindurated sediments such as sand and gravel deposits of alluvial and glaciofluvial origin, and the fluvial silts, sands, and gravels which form interbeds between basalt flows. The NRC staff would suggest the following definition: "a geologic formation, group of formations, or part of a formation that readily transmits water and is capable of yielding a significant amount of water to a well or spring."

7. p. 5677, Section 960.2-0 Definitions

DOE defines igneous activity as "emplacement (intrusion) of molten rock material into solid rocks in the earth's crust or expulsion (extrusion) of such material onto the earth's surface or into its atmosphere or water bodies." (emphasis added)

Molten "rock material" cannot be emplaced or intruded into solid rocks. NRC suggests deleting the words "solid rocks" and have the definition read either (1) "into the earth's crust" or (2) "into geologic formations in the earth's crust."

Comments on Systems Guidelines (pp. 5677-5678)

8. p. 5678, Section 960.3-1(a)(2), Performance before permanent closure

DOE states that the absence of contributing radioactive releases from other nuclear facilities would be a favorable condition for a potential repository site. In contrast, Section 960.5.7.4 (a) states that "siting on lands already committed for DOE nuclear reservations" would also be a favorable condition.

The favorable conditions in 960.3.1(a)(2) and in 960.5.7.4 (a) appear to contradict each other. The first condition would direct DOE away from sites having radioactive releases and the second condition favors "DOE nuclear reservations." DOE should clarify this point.

9. p. 5678, Section 960.3-2(a), Performance after permanent closure

DOE states that a favorable condition after permanent closure of the repository would be: "Groundwater travel times to the accessible environment of more than 10,000 years." DOE does not define in Section 960.3-2(a) the end points between which it would measure groundwater travel time as was done in Section 960.5-2-1: "from the disturbed zone to the accessible environment." Proposed 10 CFR 60.113(a)(2) also uses "from the disturbed zone to the accessible environment" to define the path of groundwater travel.

The staff recommends that DOE re-word Section 960.3-2(a) to read: "Groundwater travel times from the disturbed zone to the accessible environment of more than 10,000 years.

Section 960.3-2(a) and section 960.5-2-1 do not describe the path of groundwater travel. In 10 CFR Part 60, however, sections 60.113(a)(2) and 60.122(b)(2)(10) state, "groundwater travel time along the fastest path of likely radionuclide travel." DOE may want to explain why it did not use the wording in 10 CFR Part 60 in its guideline for groundwater travel time.

Comments on Technical Guidelines (pp. 5679-5682)

10. p. 5679, Section 960.5-0 Technical guidelines

To establish compliance with certain criteria that rely on projections, or on extension of processes and their effects which have occurred in the past, the NRC has selected a geologic time frame, the Quaternary Period, that would most likely bound those processes.

However, the DOE has introduced a span of time in years, "the past million years," in place of the geologic time frame "Quaternary Period" identified in 10 CFR Part 60. The DOE selection of "the past million years" is a period of time that may be difficult to establish in geologic history. The DOE approach is different from the NRC position, and will not simplify predictions of the performance of the geologic setting. The DOE should consider using the 10 CFR Part 60 time frame.

11. p. 5679, Section 960.5.0 Technical guidelines

DOE states; "The technical guidelines provide a set of standards to be used in judging the suitability of a site for repository development and operation" (emphasis added).

In the staff's view, suitability means that at each stage of the site-screening and selection process, the sites that remain under consideration following application of the siting guidelines have shown no fatal flaws which require their disqualification from further consideration, i.e., from proceeding to the next stage. Suitability is not a determination of acceptability. Acceptability (under the procedures of 10 CFR Part 60) means that formal determination(s) has(have) been made by the Commission that there is reasonable assurance of no unreasonable risk to the public health and safety and the environment. The authority and responsibility to make the acceptability determination lie with the Commission. DOE should clarify this in the final guidelines.

12. p. 5679, Section 960.5-2-1 Present and future hydrologic conditions.

DOE states "The site shall be disqualified if the average prewaste emplacement groundwater travel time along the path of likely radionuclide travel from the disturbed zone to the accessible environment is less than 1,000 years." (emphasis added)

In 10 CFR 60.113(a)(2), it is provided generally "that pre-waste emplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment ..." (emphasis added). It is suggested that DOE explain why the average travel time was selected rather than travel time along the fastest path.

13. p. 5679, Section 960.5.2.1 Present and future hydrologic conditions

DOE describes favorable hydrologic conditions for the saturated zone (Section 960.5.2.1(a)(2)) and for the unsaturated zone (960.5.2.1(a)(3)). DOE has paraphrased 10 CFR 60.122(b) in both sections. But DOE has followed 10 CFR 60 more closely in Section 960.5.2.1(a)(2) than in Section 960.5.2.1(a)(3).

In 10 CFR 60.122, a favorable condition for disposal in the saturated zone would be "downward or dominantly horizontal hydraulic gradient in the host rock and in immediately surrounding hydrogeologic units" (SS 10 CFR 60.122(b)(2)(ii)). In 10 CFR 960.5.2.1(a)(2), a favorable condition in the saturated zone would be; "a downward or predominantly horizontal gradient in the host rock." The underlined segment of 10 CFR 60.122(b)(2)(ii) was omitted from 10 CFR 690.5.2.1(a)(2), but the same segment appears in 10 CFR 960.5.2.1(a)(3) (disposal in the unsaturated zone).

DOE may want to consider using "surrounding hydrogeologic units" in discussing both the saturated zone and the unsaturated zone.

14. p. 5679, Section 960.5-2-1, Present and future hydrologic conditions.

DOE has not specified any potentially adverse conditions for hydrology. The NRC would carefully examine any adverse hydrologic condition before licensing a repository site (see 10 CFR 60.122(c)(2), (4), (6) and (8)). The staff suggests that DOE also consider examining potentially adverse conditions that could affect a site's hydrology.

15. pp. 5679-5681

In the following sections of 10 CFR 960, DOE has departed from the wording of 10 CFR 60. In the phrases listed below, the underlined words are the words used by DOE. The words in parentheses are used in 10 CFR 60.

a. 960.5.2.2(b)(3). Potential for water table to rise sufficiently to cause the saturation of *waste emplacement areas* in the unsaturated zone (underground facility; 10 CFR 60.122(c)(4)).

b. 960.5.2.2(b)(5). Potential for changes in hydrogeologic conditions that would *increase* the *transport* of radionuclides... (affect the migration, 10 CFR 60.122(c)(6)).

c. 960.5.2.2(b)(6). Potential for *adverse* changes in hydrologic conditions... (potential for changes; 10 CFR 60.122(c)(7)).

d. 960.5.2.4(b). Evidence of dissolution, such as *breccia pipes or dissolution cavities* -- (breccia pipes, dissolution cavities or brine pockets; 10 CFR 60.122(c)(11)).

e. 960.5.4.2(b)(2). *Geomechanical properties that would not permit underground openings to remain stable until permanent closure*. (Geomechanical properties that would not permit design of underground openings that will remain stable through permanent closure; 10 CFR 60.122(c)(22)).

f. 10 CFR 690.5.5.3(b)(2). Evidence of active *uplift, subsidence, or folding* within the geologic setting (uplift, subsidence, folding and faulting; 10 CFR 60.122(c)(12).)

DOE should be prepared to discuss with the NRC staff its rationale for departing from the wording in 10 CFR 60.

16. p. 5680, Section 960.5.4.2 Operational safety

Paragraph (b)(1) reads "Rock conditions that would require complex engineering measures in the design and construction of the underground facility or in the sealing of boreholes and shafts (10 CFR 60.122(c)(21))." DOE should explain why the words "or groundwater", as "Rock or groundwater conditions...", in the NRC criteria, were not included.

17. p. 5680, Section 960.5.5.1 Faulting and seismicity

The reference quoted in paragraph (b)(5) should be 10 CFR 60.122 (c)(15).

18. p. 5680, Section 960.5-5-1(a)(2) Faulting and seismicity

DOE states: "The nature and rate of faulting, if any, operating within the geologic setting during the past million years would, if continued into the future, have less than one chance in 10,000 over the next 10,000 years of leading to releases of radioactive waste to the accessible environment (proposed 40 CFR 191.13)." Similar statements are made concerning uplift, subsidence and folding in 960.5-5-3(a)(2) and concerning igneous activity in 960.5-5-2(a)(2).

The problem in application of this criteria is that it will be very difficult to establish the rates of the geologic process with sufficient certainty to input into the "risk" calculation. The problems are of two types: (1) geologic processes are sometimes not well understood and can be episodic rather than continuous, and (2) the evidence necessary for the determination of rates is often lacking. This type of calculation is similar to "capable fault" determination, 10 CFR 100 Appendix A. There have been considerable licensing problems concerning that concept. The specified probabilistic standards are not incorporated in 10 CFR Part 60 and, in so far as NRC is concerned, would not be required in the guidelines.

19. p. 5681, Section 960.5.6.1 Natural resources

In paragraph (b)(2), delete the word "within" which preceeds 10 CFR 60.122(c)(19).

20. p. 5681, Section 960.5.7.1 Surface-water systems

The reference quoted in paragraph (b)(1) should be 10 CFR 60.122(c) (2).

21. p. 5681, Section 960.5.7.1 Surface-water systems

The reference quoted in paragraph (b)(2) should be 10 CFR 69.122(c) (1).

22. p. 5681, Section 960.5.7.3 Meteorology

DOE does not specify any favorable conditions under meteorology. The NRC staff suggests that DOE consider using the following favorable condition: "For a site in the unsaturated zone, a climatic regime with precipitation as a small percentage of potential evapotranspiration." This addition would be consistent with 10 CFR 60.122(b)(3)(v).

23. p. 5681, Section 960.5.7.4 Offsite hazards

DOE states; "The site shall be such that present and projected effects from nearby industrial, transportation, and military installations and operations including atomic energy defense activities, can be accommodated by engineering measures and can be shown to have no unacceptable impacts on repository operation."

Radioactive effluents from some of the above noted activities could affect a repository's monitoring. It is suggested that DOE consider modifying the guidelines to read: "...can be shown to nave no unacceptable impacts on repository operation and repository monitoring."

24. p. 5682, Section 960.5.8.1 Population near the site

The reference quoted in paragraph (a) should be 10 CFR 60 (b)(7).

25. p. 5682, Section 960.5.8.2 Transportation

One of the objectives of DOE's transportation guidelines states; "Consideration shall be given to the proximity of locations where waste is currently generated or temporarily stored and the transportation and safety factors involved in moving such waste to a repository."

With the above objective in mind, the NRC staff suggests that DOE consider adding the following favorable condition: "Locate repository sites near the sources of HLW." This addition would make the guidelines more responsive to the concept of regional repositories.

25. p. 5592, Section 960.5.9 Environmental protection

DOE states; "A site shall be disqualified if it is located within the boundaries of a significant nationally protected natural resource, such as a National Park, National Wildlife Refuge, or Wilderness Area, and its presence conflicts irreconciably with the previously designated use of the site."

The same natural resources appear as potentially adverse conditions (SS 960.5.9(b)(3)). The adverse conditions, however, also include National Wild and Scenic Rivers and National Forest Land.

Since National Wild and Scenic Rivers and National Forest Land were listed in the Act along with the natural areas identified above, it is suggested that DOE clarify why these two were treated differently.

QUESTION 6: There has been discussion of the possibility of DOE's completing certain actions required under the Nuclear Waste Policy Act in advance of the date called for in the Act. Have you had any discussions with DOE about expediting the schedule under the Act? If so, what specifically is being considered, and how will this affect the resources that you have requested for FY 1984-1985?

ANSWER.

NRC is staying in close touch with DOE as they develop the Mission Plan and the Project Decision Schedule. Although program schedules have not been finalized by DOE, it is our understanding that DOE plans to nominate five sites, prepare environmental assessments, and recommend three sites for characterization to the President; all in Fiscal Year 1983. Recommending three sites to the President for characterization in Fiscal Year 1983 would be well in advance of the statutory date required by the Act of January, 1985. However, DOE has indicated by their previous planning schedules that up to four years would be required to construct a shaft to repository depth and collect data to sufficiently characterize a site. Therefore, DOE believes the present schedule would be necessary for them to meet the statutory date of March 1987 for selecting a repository site.

DOE has indicated that they plan to submit three Site Characterization Plans to NRC in late FY 1983 to early FY 1984. Further, if DOE is to meet the statutory date for selection of the second repository by March 1990 (assuming they do not request a one year delay) we would anticipate activity to nominate additional sites in FY 1985 and submission of a second repository Site Characterization Plan(s) in FY 1986. These activities are expected to require an increase in NRC resources for FY 1984 and FY 1985. Efforts are presently underway to determine our additional resource needs. We expect to be able to identify these needs in mid/late April.

QUESTION 7. You note in your testimony that the report on resident inspectors called for under the FY 1982-1983 authorization will be ready for submission in early April of this year. What changes in the Commission's resident inspector program have been made as a result of Congress' decision last year not to approve certain forms of assistance for resident inspectors and how have these changes affected the effectiveness of this program? Do you anticipate the need to make further changes in this program? Do you expect to lose resident inspectors in the event that no assistance is forthcoming?

ANSWER.

Following Congress' decision last year not to approve the Commission's legislative proposal to provide financial relief for Resident Inspector relocations and commuting costs, the staff reexamined the policy of limiting the tour of duty for Resident Inspectors to a maximum of five years at any one site. In view of the importance of ensuring that the incumbents in these important positions remain objective while working in an environment which is relatively isolated from other members of the NRC, the staff concluded that the policy of limiting tours to five years should be maintained as a goal. However, gaining adequate financial relief for Resident Inspector rotations was recognized as important to the successful implementation of this policy. Therefore, in recognition of the current, significant costs of household moves, the staff has adopted a near-term policy which, on a case basis, allows for tour extensions beyond five years. As of this writing, none of our Resident Inspectors have reached the five year point in their tours, although several may do so during the second half of CY-1983.

In accordance with Public Law 97-415 (NRC's FY 1982-1983 Authorization Bill), the staff has recently completed a new study of the financial hardships imposed on Resident Inspectors in relocating to new assignments and in daily commuting to and from nuclear facilities and has prepared a report for the Commission. The NRC has also become aware of an imminent GAO report on Resident Inspector tour length policy. Because of the interrelationship between tour length policy and financial hardship, the Commission would like the benefit of the GAO findings before submitting a recommendation to the Congress on the need for legislative relief. Following receipt of the report, the Commission will evaluate the need to make any changes in the current policy. The potential for losses in the Resident Inspector community as a result of rotation policy will be an important element in our evaluation. As discussed with the committee staffs, we currently plan to submit our recommendation to Congress 30 to 60 days after receipt of the GAO report. However, if the GAO report continues to be delayed, we may go ahead without it.

QUESTION 8. What is the status of the TMI-1 restart proceeding and when do you expect to reach a decision authorizing restart?

ANSWER.

The Commission's Atomic Safety and Licensing Board concluded its part in the restart proceeding upon issuance of its third and final opinion on July 27, 1982. The Licensing Board found in favor of restart. Both the Commission's Atomic Safety and Licensing Appeal Board and the Commission itself are now actively reviewing those decisions.

The Atomic Safety and Licensing Appeal Board has already issued several opinions in its review of the Licensing Board's decisions. The Appeal Board has concluded its review of the emergency preparedness issues and of whether an environmental impact statement dealing with "Class 9" accidents is required prior to restart. Those Appeal Board decisions are favorable to restart.

However, the Appeal Board in connection with its review of the Licensing Board's decision on hardware/design issues reopened the record on December 29, 1982 because it found the existing record "unclear as to whether adequate core decay heat removal can be assured for TMI-1 in the event of a loss of main feedwater or a small break loss of coolant accident." ALAB-708 at 42. The Appeal Board completed its evidentiary hearing on this issue on March 18, 1983. The Appeal Board now has pending before it both its review of the Licensing Board's hardware/design decision, including the adequacy of core decay heat removal, and the Licensing Board's decisions on management competence and cheating.

The Commission itself also has pending before it two separate issues in the restart proceeding. First there is the issue of whether to lift the immediate effectiveness of the 1979 Orders which directed that TMI-1 remain shut down, i.e., whether to authorize restart while the appellate process within the agency is ongoing. We understand that the licensee currently believes ongoing repairs can be sufficiently completed so that the plant can be ready to return to criticality by mid-July. However, inasmuch as this estimate contains no contingencies for unforeseen problems, e.g., a need for additional work that might be revealed in post-repair testing, the mid-July target may be optimistic.

The Commission is striving to resolve restart issues in as expeditious a manner as possible. However, we cannot rule out the possibility that unforeseen problems may affect our schedule. For example, among the factors that lend uncertainty to the schedule is the possibility of further allegations calling the safety of operating the plant into question. In fact, the Commission currently is looking into recent allegations regarding TMI-2 that may influence the TMI-1 proceeding. We are examining ways to surface and review such allegations earlier in the decision process. Although we cannot realistically guarantee a specific decision-date, the Commission remains committed to rendering a decision on restart as soon as practicable.

QUESTION 8.

Second, the Commission on March 21, 1983 granted the NRC staff's petition to review one issue emanating from the Licensing and Appeal Board decisions concerning emergency preparedness. That issue involves whether the licensee's employee who will make protective action recommendations during the first few hours of any emergency should be located in the control room or the emergency offsite facility. The Commission also vacated the Appeal Board's requirement that the NRC complete its emergency plans and furnish them to GPU and the Commonwealth prior to restart because that issue would be more appropriately addressed as a generic matter in the overall consideration of NRC emergency response plans.

QUESTION 9: In response to one of the questions that I submitted to the Commission in advance of the hearing, having to do with any new safety information resulting from the Babcock & Wilcox-GPU litigation, the Commission noted that the staff is reviewing the safety significance of new information presented in that trial. Has the staff reached any conclusions about information uncovered in the trial that might have some significant bearing on the TMI-1 restart?

ANSWER

As noted in the NRC's response to Question 7 of your March 17, 1983 letter, new information which concerned the ability of B&W-designed reactors to achieve and maintain natural circulation was identified during the review of the trial court record. The NRC staff has completed its review of this new information and concluded that this information does not have a significant bearing on TMI-1 restart. Board Notification BN 83-21A, dated March 11, 1983 which addresses the NRC staff's review of this information is attached. 1/

The NRC staff has completed the review of the B&W-GPU trial record. The review team concluded that the trial court record did not contain information that significantly affected the NRC's understanding of the accident, including but not limited to the sequence of events. A copy of the report of this review is attached. GPU has advised the NRC of the availability of over 1000 additional documents related to the trial, but not previously available to us. The staff is currently engaged in examining these documents and will advise the Commission of the results of their review in May.

Additional views of Commissioners Gilinsky and Asselstine are attached.

1/ The attachment referred to has been retained in the committee files.

QUESTION 9. Additional Views of Commissioner Asselstine:

Commissioner Asselstine supported Commissioner Gilinsky's request for an independent review of the transcript in GPU v. B &W by the General Counsel.

QUESTION 9 Additional Views of Commissioner Gilinsky:

. As I explained to you in my letter of April 7, 1983, I had asked the General Counsel to identify information developed in the trial between GPU and B&W which may be pertinent to the Commission's decision on the restart of Unit 1. Unfortunately, a Commission majority of three blocked that request and referred the question to the NRC staff. Not surprisingly, the NRC staff, which is a party to the proceeding advocating the restart of Unit 1 and which, in large measure, was commenting on the adequacy of its own investigation of the accident, concluded that the trial record contained no new information of relevance to the Commission's decision. What is surprising is that the staff's report contained not a single citation to the trial record. Indeed a surprisingly small portion of this short report deals with the trial; for the most part it consists of quotations from prior reports.

QUESTION 10. If the Supreme Court should rule that the Commission is required to address the psychological stress issue prior to the restart of TMI-1, what steps does the Commission intend to take to ensure prompt completion of the psychological stress review, and does it appear that this effort could become the pacing item for the restart of TMI-1?

ANSWER:

On April 19, 1983, the Supreme Court ruled unanimously that the Commission was not required to consider the alleged psychological health effects of restarting TMI-1 in the restart proceeding. It remanded the case to the D.C. Circuit with instructions to dismiss PANE's petition for review.

Additional views of Commissioners Gilinsky and Ahearne are attached.

QUESTION 10 Additional Views of Commissioner Gilinsky:

It is ironic that the Commission originally decided not to consider the psychological stress issue because it feared that doing so would delay the restart of Unit 1 but that it is now willing to risk delaying the restart -- by not preparing an environmental impact statement -- in order to keep the case alive in Court so as to prevail on a matter of principle. This is yet another instance in which the Commission would have done better by acting in a common sense manner.

QUESTION 10 Additional Views of Commissioner Ahearne:

Commissioner Gilinsky's statement that "the Commission originally decided not to consider the psychological stress issue because it feared that doing so would delay the restart of Unit 1" is not correct--certainly it is not the reason I voted in favor of the Commission's position--as Commissioner Gilinsky knows both from Commission meetings and my separate views on the issue published with the Commission's order.

QUESTION 11. This year's budget request includes $10 million in FY 1984-1985 funds for Phase III of the Systematic Evaluation Program. Phases I and II of this program focused on the eleven oldest operating reactors and, as I understand it, resulted in some modifications to the equipment and procedures at these plants, but by and large demonstrated that these plants were much better built than the NRC expected. While the Commission has requested $10 million for Phase III of the program, which will involve the remaining operating reactors, no decision has actually been made yet by the Commission to proceed with Phase III.

(a) What is the Commission's position on going forward with Phase III and, in light of the favorable results from Phase II, will the expense of Phase III justify what will most certainly be very modest changes in these newer plants, if any?

ANSWER.

The Commission has not yet developed a final position on the continuation of the Systematic Evaluation Program (SEP). The NRC staff is developing a detailed program plan which will include a cost-benefit evaluation based on the safety improvements realized in the Phase II reviews. A decision in this regard will be based on experience gained from Phase II and, particularly, the potential safety benefits that could be expected from continuing the program.

QUESTION. (b) What does the Commission project the cost of Phase III to be (1) for the Commission, and (2) for industry?

ANSWER.

The budget request for FY 1984-1985 (9.93 million and 76 professional staff years) represents the cost to the Commission to conduct Phase III for approximately ten plants to be completed during that two-year period. That cost estimate was derived from the review time expended in Phase II for the reduced scope of topics projected for Phase III.

Based on experience from Phase II, we estimate that the industry cost would be approximately $2 million per plant for evaluation and engineering. Plant modification costs are more difficult to estimate because they are dependent on the results of the review. Typically, the plant modification costs for the five newer plants in Phase II are projected by the plant owners to be approximately $3 to $5 million per plant. In one instance, the Ginna plant, structural modifications may result in costs as high as $20 to $40 million.

QUESTION 12. What steps, if any, does the Commission intend to take to expand the use of the integrated assessment methodology developed in conjunction with Phase II of the Systematic Evaluation Program?

ANSWER.

The experience from SEP Phase II is currently being reviewed. That review will also consider the merits and broader applicability of the integrated assessment process developed under SEP. A proposal to extend the use of the integrated assessment process is currently being developed by the NRC staff in the context of a proposal to continue SEP.

QUESTION 13. Please provide a detailed legal analysis of the recent City of West Chicago v. NRC (March 1, 1983) decision.

ANSWER.

On March 1, 1983, the United States Court of Appeals for the Seventh Circuit issued its decision in two consolidated cases concerning the NRC's ongoing activities to decommission Kerr-McGee Corporation's Rare Earths Facility in West Chicago, Illinois.1/ The decision, which upheld the procedural and substantive rulings in the Commission's February 11, 1982 order CLI-82-2, has important implications for the development of the agency's adjudicatory practice concerning domestic nuclear materials licensing under 10 CFR Part 30 (byproduct materials), Part 40 (source materials), and Part 70 (special nuclear materials). Specifically, it places a judicial imprimatur upon the practice of convening an informal adjudication to satisfy the "hearing" requirement of Atomic Energy Act (AEA) section 189a, 42 U.S.C. § 2239(a), with regard to materials licensing actions.

As is detailed in the Seventh Circuit's opinion, slip op. at 3-4, the City sued the NRC in federal district court in Chicago challenging the NRC staff's issuance of an amendment to the Kerr-McGee license for the West Chicago facility and the timing of the staff's ongoing preparation of an environmental impact statement for the decommissioning of the Rare Earths Facility. At the City's request, the district court enjoined the effectiveness of the amendment and ordered the Commission to provide the City with an opportunity to request a hearing on the amendment. In response to the court's order, the City requested a formal, trial-type hearing. The Commission responded by requesting written arguments and documentation from the City and Kerr-McGee concerning the issues raised by the City in its hearing request. After consideration of these materials, the Commission issued its decision in which it declared that only an informal, written hearing need be afforded to interested persons concerning a materials licensing action and that, on the basis of the parties' documentary submissions and the existing record, the staff's issuance of the amendment should be affirmed. Kerr-McGee Corp. (West Chicago Rare Earths Facility), CLI-82-2, 15 NRC 232 (1982).

1/ The Rare Earths Facility is a thorium ore milling facility that was purchased by Kerr-McGee Corporation in 1967 and operated until 1973. In December 1979 the NRC staff gave public notice of its intent to prepare a draft environmental impact statement (EIS) to discuss Kerr-McGee's proposal for disposal of the approximately 5 million cubic feet of contaminated material presently on site. A draft EIS was issued in May 1982. A final EIS is now in preparation and is expected to be issued within the next several months.

QUESTION 13.

Subsequently, the district court granted an agency motion to dismiss the City's case for lack of subject matter jurisdiction. The City filed with the Seventh Circuit both a petition for review of the Commission's order and a direct appeal of the district court's dismissal of its lawsuit, which were consolidated by the court for consideration at the same time.

I. The Decision

A. Petition for Review

The Commission declared in its February 1982 order that neither NRC regulations, the Atomic Energy Act, nor constitutional due process required that the agency afford a formal, trial-type hearing for materials licensing actions. In the court's unanimous opinion, written by Chief Judge Walter Cummings, the Commission was affirmed on all three counts.

In its order, the Commission construed 10 CFR §§ 2.104 and 2.105 as giving interested persons a formal hearing only in a few specified materials licensing actions that were not relevant to the Kerr-McGee amendment. The Court upheld the Commission's interpretation of its regulations. In addition, the court declared that, under the circumstances, the Commission had "ample cause" not to grant a formal hearing under the public interest standard of 10 CFR §§ 2.104(a) and 2.105(a)(6).

With regard to the Atomic Energy Act's requirements, the absence of the word "on the record" from AEA section 189a, when combined with the lack of any clear congressional intent about whether formal hearings were required, led the court to conclude that no formal hearing was mandated for materials licensing cases under AEA section 189a or section 5 of the Administrative Procedure Act, 5 U.S.C. § 554.2/ The court also found that the fact the Commission was conducting an adjudication, as opposed to rulemaking, did not require that a formal hearing be held.

Finally, applying the test set forth by the Supreme Court in Mathews v. Eldridge, 424 U.S. 319 (1976), for determining what procedural strictures the Constitution may impose, the court concluded there were no constitutional infirmities in the Commission's granting only an informal proceeding. The court noted that the generalized health, safety, and environmental concerns of the City were not sufficient to create a property or liberty interest requiring due process protection, and that,

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2/ Although the court at one point states that its conclusion is that "formal hearings are not statutorily required for amendments to materials licenses," slip op. at 12 (emphasis supplied), it seems clear from the whole opinion that its holding is, in fact, broader.

QUESTION 13.

in any event, the City, by acquiescing in similar earlier building demolition, appeared to place only a minimal value on its interests. The court also found that because the issues raised by the City were scientific and technical in nature and did not raise questions of credibility, a paper hearing without oral presentations was sufficient.[3]

Finally, the court found that the expense of a formal hearing for all the parties weighed in favor of less formal proceedings. On the basis of these conclusions, the court concurred with the Commission's determination that in this instance due process did not require additional procedures beyond the acceptance of written submissions.

In the context of its due process analysis, the court also commented on whether the agency gave the City sufficient notice of its determination to apply a new set of procedures to the City's hearing request. Initially, the court declared that it did "not doubt the authority of the NRC to change its procedures on a case-by-case basis with timely notice to the parties involved, . . . but we question the wisdom of doing so without the benefit of published regulations." Slip op. at 23 (citation omitted). On the issue of notice in this instance, the court, while calling this case a "close one," id., nonetheless found the Commission's letters to the City and Kerr-McGee were sufficient to put the parties on notice of the procedures to be used. The court also noted that the City had presented no evidence, other than mere allegations of prejudice, to indicate it would have responded differently if it had a more definite idea of the type or scope of the hearing.[4]

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[3] In a recent case, the United States Court of Appeals for the Fifth Circuit likewise concluded that formal procedures with cross-examination may be of little use when scientific or technical questions are at issue. Buttrey v. United States, 690 F.2d 1170, 1182 (5th Cir. 1982).

[4] Another procedural issue discussed by the court was whether the agency had given proper notice of the reasons why it decided not to issue an EIS on Amendment No. 3. Although the court did not decide specifically whether notice and an opportunity to comment were required on such decisions, it declared that even if such procedural requirements existed, the City had an adequate opportunity to contribute to such a decision by way of its opportunity to file submissions in the course of the informal proceeding.

QUESTION 13.

On the merits of the City's six contentions presented before the Commission, the court held that the February 11 order was not "arbitrary and capricious" and so should be upheld. The court found no basis for the City's challenges to the use of foam rather than water for dust-abatement during demolition or the use of existing storage tanks rather than building and using a lagoon to contain runoff. The court also determined that the NRC staff's proposed criteria for the disposal of thorium wastes, 46 Fed. Reg. 52063 (Oct. 23, 1981), was not violated by Amendment No. 3 and that there was no requirement for the NRC to delay issuance of Amendment No. 3 until Kerr-McGee obtained a city building demolition permit. Finally, the court upheld the agency's decision to approve the amendment prior to issuance of the EIS for the decommissioning of the facility. The court held that so long as the agency takes the requisite "hard look" at the environmental impacts of a component part of an overall plan that is the subject of an EIS, and that part does not prejudice any of the options being considered with regard to the overall plan, the agency is not precluded from acting with regard to the component.

Having thus found that the informal procedures used by the Commission were in accord with its regulations, the Atomic Energy Act, and constitutional due process and that the agency did not act arbitrarily or capriciously in issuing Amendment No. 3, the court affirmed the Commission's February 11, 1982 order.

B. Appeal of District Court Dismissal for Want of Subject Matter Jurisdiction

In reviewing the district court's dismissal of the City's complaint for lack of subject matter jurisdiction, the court of appeals first rejected the City's argument that both the district court and the court of appeals had concurrent jurisdiction over its claim that the issue of Amendment No. 3 constituted illegal segmentation under the National Environmental Policy Act (NEPA). Slip op. at 33-34 & n.21. Rather, the court found that because the NEPA issue was dealt with in the Commission's February 11 order, it was reviewable only in the courts of appeals in the context of a challenge to the final order.

With regard to the City's claims concerning the preparation of an EIS for the decommissioning of the West Chicago facility, the court of appeals indicated that the district court might have jurisdiction to entertain a complaint that the agency was violating a clear, nondiscretionary duty imposed by NEPA. The court found that no such jurisdiction existed in this instance because the NRC clearly was acting to comply with NEPA, having already issued a draft EIS on Kerr-McGee's proposed decommissioning plan. The court went on to note that what the City really was complaining about was what the City considered improper delay by the NRC in preparing the EIS. Assuming arguendo that the district court had jurisdiction to compel agency action if the NRC was unreasonably delaying the issuance of an EIS, the court nonetheless found that the district court would be precluded from exercising such jurisdiction here because of the doctrine requiring exhaustion of administrative remedies. Specifically, the court

QUESTION 13.

found that the City could have availed itself of what the court concluded was the opportunity afforded by 10 CFR § 2.206 to request the agency to expedite the licensing proceeding and the EIS process. The court noted further that any agency action on such a request would then be appealable to a court of appeals. Because the City had not used this administrative remedy, the court of appeals found the district court properly had dismissed its complaint.

II. Implications of West Chicago Decision

The court of appeals affirmance of the Commission's February 11 order firmly establishes the Commission's legal authority to grant informal hearings in material licensing cases. The propriety of such hearings will, of course, be subject to challenge in other federal circuits, including the District of Columbia Circuit. However, the Seventh Circuit's unqualified adoption of the Commission's analysis of this issue will give the agency a strong basis for defending such suits.

Although it is now judicially established that the Commission need not, as a matter of course, afford intervenors a formal hearing in nuclear materials licensing proceedings, the exact parameters of this authority will need further exploration. For instance, under the balancing test endorsed by the Supreme Court in Mathews v. Eldridge the property interests of license applicants and licensees may be different from those of intervenors. See Buttrey v. United States, 690 F.2d 1170, 1177-78 (5th Cir. 1982) (permit applicant); Gallagher & Ascher Co. v. Simon, 697 F.2d 1067, 1077 & n.12 (7th Cir. 1982) (permit holder). Further, the value of more formal procedures may be different when questions of credibility or veracity, as opposed to strictly technical or scientific issues, are involved. In drafting regulations to implement the Commission's West Chicago decision, a task the agency now intends to undertake, careful attention will be given to the implications of such distinctions in determining what minimal procedures are necessary.

Moreover, it should be pointed out that the West Chicago decision did not reach the question of the legal basis for the agency's longstanding practice of providing formal hearings for reactor licensing proceedings. The Commission's order and the agency's brief drew a careful distinction between such reactor licenses and other licensing activities under section 189a. Thus, the court of appeals did not address this issue.

Additional views of Commissioners Asselstine and Gilinsky are attached.

QUESTION 13. Additional Views of Commissioners Asselstine and Gilinksy

Commissioners Asselstine and Gilinsky believe that the West Chicago decision should not be read to endorse any revision of the agency's long standing practice of providing formal hearings for reactor licensing proceedings.

QUESTION 14. Please provide the Commission's comments on the Rocky Mountain Low-Level Waste Compact.

ANSWER.

Our comments to the Rocky Mountain Low-Level Radioactive Waste Compact group are attached. They are as follows:

1. January 5, 1982 letter to Mr. Leonard Slosky, Assistant to the Governor for Science and Technology, State of Colorado, from G. Wayne Kerr, Director, Office of State Programs, with enclosure and incoming letter dated December 21, 1981.
2. February 1, 1982 letter to Mr. Slosky from G. Wayne Kerr with enclosure.
3. May 6, 1982 letter to Mr. Slosky from G. Wayne Kerr with enclosure and incoming letter dated March 19, 1982.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JAN 5 1982

Mr. Leonard Slosky
Assistant to the Governor for
Science and Technology
State of Colorado
Executive Chambers
136 State Capitol
Denver, CO 80203

Dear Mr. Slosky:

Thank you for your letter dated December 21, 1981 in which you asked us to comment on your discussion draft (December 15, 1981) Rocky Mountain Low-Level Radioactive Waste Compact. We believe that the draft is an excellent effort with relatively few problem areas. The Rocky Mountain States under the leadership of Colorado are to be complimented for the compact effort that they have concluded to date. Our comments on the specific provisions follow:

Article 2. Definitions

1. Article 2.C contains a definition of disposal that is based on intent which may make it difficult to distinguish disposal from storage. We recommend that the definition be amended to mean isolation of radioactive wastes from the biosphere by emplacement in a facility for burial in land.

2. Article 2.G contains a definition of low-level waste that differs from the definition in the Low-Level Radioactive Waste Policy Act (Public Law 96-573) (LLRWPA). We believe that the definition should conform to that of the act.

3. Article 2.H contains a definition of management that includes the word incineration. Is it your intention to retain the word since several references to incineration were removed from the draft compact version of December 8, 1981?

Article 3. Rights, Responsibilities and Obligations

1. Article 3.A states that there will be at least one regional facility operating in a party state other than Nevada within six years after the compact becomes law in Nevada and one other state. Because the

Nevada legislature does not meet in 1982, except by special session, the earliest Nevada will probably enact the compact legislation is 1983. Therefore, the required date for another regional facility in another state is 1989 (1988 at the earliest). However, LLRWPA permits an effective date of January 1, 1986 for exclusion of out-of-region waste and the compact calls for that exclusion date. Our question is will Nevada continue to operate the Beatty facility at least until 1989?

2. Article 3.C discusses the generation of twenty percent or more of low-level waste without specifying how the quantity is measured. Two common measures are by volume and activity. We presume that the measure is by volume. We believe that quantity by volume should be specifically stated.

3. Article 3.D.(4) uses the words "perpetual care." We believe that the words "long-term care" that were used elsewhere in the draft compact is a more appropriate phrase.

4. Article 3.F.(1) raises questions of the appropriateness of state inspection and enforcement activities of NRC licensees.

   We believe the onsite inspection of NRC licensees can be satisfactorily accommodated by an agreement between NRC and each of the states in the compact. Specifically, under section 274i of the Atomic Energy Act, NRC has the authority to enter agreements with states to perform inspections. We have drafted a proposed agreement (enclosed) which would authorize a state to inspect waste packaging on the premises of NRC licensees. Any state law enforcement based on findings from these inspections would be under state law, not under the Atomic Energy Act. A section 274i agreement is separate and distinct from the agreement entered into between NRC and a state under the "Agreement State" regulatory program; the latter is accomplished only by entering into an agreement under section 274b of the Atomic Energy Act. Of the states listed in Article VIII, the states of Arizona, Colorado, Nevada and New Mexico are Agreement States. Utah and Wyoming are not. In our view a 274i agreement can be entered into by a state whether or not it has a 274b agreement.

5. Article 3.F.(3) makes reference to paragraphs (2) and (3) of the subsection. This is an error left over from the previous draft compact and should read "paragraphs (1) and (2) of this subsection."

Article 4. Board Approval of Regional Facilities

1. Article 4.A states that the Board shall approve or disapprove a host state's site selection within 90 days of submittal to the Board. This time period appears to be too short to conduct the

necessary review unless the proposing state has already done extensive investigation into the licensability of the selected site which the Board will accept without its own comprehensive review.

Article 5. Surcharges

1. Articles 5.A and 5.B discuss surcharges per unit of waste received at any regional facility, but does not specify a measurement system. Perhaps a specific power delegated to the Board should be establishing the units of measurement.

Article 6. The Board

1. Article 6.O.(5) does not specify what "private low-level waste facilities" are, nor does it clarify the purpose of this provision.

We continue to feel that the Rocky Mountain States are to be complimented for their work on compact formation. We look forward to working with you to achieve a successful conclusion of this compact effort.

Sincerely,

G. Wayne Kerr

G. Wayne Kerr, Director
Office of State Programs

Enclosure:
Proposed 2741 Agreement

cc: (with incoming and enclosure)
Charles F. Tedford, Arizona
Ace Martelle, Nevada
Bruce Garber, New Mexico
Al Rickers, Utah
Walt Ackerman, Wyoming
Doug Larson, WIEB

STATE OF COLORADO

EXECUTIVE CHAMBERS
136 State Capitol
Denver, Colorado 80203
Phone (303) 866-2471

Richard D. Lamm,
Governor

December 21, 1981

Mr. Wayne Kerr, Director
State Programs
U.S. Nuclear Regulatory Commission
Matomic Building, 1717 H Street N.W.
Washington, DC 20555

Dear Mr. Kerr:

I have enclosed for your comment the latest draft of the Rocky Mountain LLW Compact. This latest version includes several changes made by the governors' representatives at the meeting of December 15 and nearly concludes their negotiations on the specific language of the Compact.

As it is now written, the Compact will be presented to the state legislatures in Colorado and New Mexico in January. Considering the fact that essentially identical language must be approved in each of the states, we do not expect to make any additional substantive changes to the Compact.

Changes incorporated in this December 15 version which would be of most interest to NRC are cited below:

1. Per our discussions with NRC, "alpha-emitting" was removed from the Compact's definition of "low-level waste" (article 2, subsection G).
2. Article 2, subsection L, paragraph 2 was revised to read "is the low-level waste facility in existence on January 1, 1982 at Beatty, Nevada."
3. Throughout the Compact, references to "perpetual care" were revised to read "long-term care".
4. Article 3, subsection F, paragraph 1 and the reference made therein was deleted and replaced with a new subsection A in article 7, reading: "It shall be unlawful for any person to dispose of low-level waste within the region except at a regional facility, provided however, that a generator who, prior to January 1, 1982 had been disposing of only his own waste on his own property may, subject to applicable federal and state law, continue to do so."
5. Subsection D of Article 8 was combined with the preceeding subsection and revised so that all provisions not affecting interstate commerce take effect as soon as the Compact takes effect.

6. Subsection F of article 8 was revised to explicitly state that a party state could be excluded from the compact, as opposed to "participation in the activities of the board".

Since both Colorado's and New Mexico's legislative sessions begin in January 1982, we would appreciate having your comments as soon as possible. Thank you for your cooperation.

Sincerely,

Leonard Slosky

Leonard Slosky
Assistant to the Governor for
Science & Technology

LS:bh

cc: Jim Montgomery

DISCUSSION DRAFT

December 15, 1981

ROCKY MOUNTAIN

LOW-LEVEL RADIOACTIVE WASTE COMPACT

ARTICLE 1

FINDINGS AND PURPOSE

A. The party states agree that each state is responsible for providing for the management of low-level radioactive waste generated within its borders, except for waste generated as a result of defense activities of the federal government or federal research and development activities. The party states also recognize that low-level radioactive waste can be most safely and efficiently managed on a regional basis. Moreover, the party states find that the United States Congress, by enacting the Low-Level Radioactive Waste Policy Act (P.L. 96-573), has encouraged the use of interstate compacts to provide for the establishment and operation of facilities for regional management of low-level radioactive waste.

B. It is the purpose of the party states, by entering into an interstate compact, to establish the means for cooperative effort in managing low-level radioactive waste; to ensure the availability and economic viability of sufficient facilities for the proper and efficient management of low-level radioactive waste generated within the region while preventing unnecessary and uneconomic proliferation of such facilities; to encourage reduction of the volume of low-level radioactive waste requiring disposal within the region; to restrict management within the region of low-level radioactive waste generated outside the region; to distribute the costs, benefits and obligations of low-level radioactive waste management equitably among the party states; and by these means to promote the health, safety and welfare of the residents within the region.

ARTICLE 2

DEFINITIONS

As used in this compact, unless the context clearly indicates otherwise:

A. "board" means the Rocky Mountain Low-Level Radioactive Waste Board;

B. "carrier" means a person who transports low-level waste;

C. "disposal" means isolation intended to be for a term longer than five years;

D. "facility" means any property, equipment or structure used or to be used for the management of low-level waste;

E. "generate" means to produce low-level waste;

F. "host state" means a party state in which a regional facility is located or being developed;

G. "low-level waste" or "waste" means radioactive waste, other than that generated as a result of defense activities of the federal government or federal research and development activities, which is neither irradiated reactor fuel, liquid waste from reprocessing irradiated reactor fuel or solids into which any such liquid waste has been converted; waste material containing transuranic elements with contamination levels greater than ten nanocuries per gram of waste material; nor byproduct material as defined in Section 11 e. (2) of the Atomic Energy Act of 1954, as amended;

H. "management" means collection, consolidation, storage, treatment, incineration or disposal;

I. "operator" means a person who operates a regional facility;

J. "person" means an individual, corporation, partnership or other legal entity, whether public or private;

K. "region" means the combined geographical area within the boundaries of the party states; and

L. "regional facility" means a facility within any party state which either:

(1) has been approved as a regional facility by the board; or

(2) is the low-level waste facility in existence on January 1, 1982, at Beatty, Nevada.

ARTICLE 3

RIGHTS, RESPONSIBILITIES AND OBLIGATIONS

A. There shall be regional facilities sufficient to manage the low-level waste generated within the region. At least one regional facility shall be open and operating in a party state other than Nevada within six years after this compact becomes law in Nevada and one other state.

B. Low-level waste generated within the region shall be managed at regional facilities without discrimination among the party states; provided, however, that a host state may close a regional facility when necessary for public health or safety.

C. Each party state which, according to reasonable projections made by the board, is expected to generate twenty percent or more of the low-level waste generated within the region has an obligation to become a host state in compliance with subsection D of this article.

D. A host state, or a party state seeking to fulfill its obligation to become a host state, shall:

(1) cause a regional facility to be developed on a timely basis as determined by the board, and secure the approval of such regional facility by the board as provided in Article 4 before allowing site preparation or physical construction to begin;

(2) ensure by its own law, consistent with any applicable federal law, the protection and preservation of public health and safety in the siting, design, development, licensure or other

regulation, operation, closure, decommissioning and long-term care of the regional facilities within the state;

(3) subject to the approval of the board, ensure that charges for management of low-level waste at the regional facilities within the state are reasonable;

(4) solicit comments from each other party state and the board regarding siting, design, development, licensure or other regulation, operation, closure, decommissioning and perpetual care of the regional facilities within the state and respond in writing to such comments;

(5) submit an annual report to the board which contains projections of the anticipated future capacity and availability of the regional facilities within the state, together with other information required by the board; and

(6) notify the board immediately if any exigency arises requiring the possible, temporary or permanent closure of a regional facility within the state at a time earlier than was projected in the state's most recent annual report to the board.

E. Once a party state has served as a host state, it shall not be obligated to serve again until each other party state having an obligation under subsection C of this article has fulfilled that obligation. Nevada, already being a host state, shall not be obligated to serve again as a host state until every other party state has so served.

F. Each party state:

(1) agrees to acopt and enforce procedures requiring low-level waste shipments originating within its borders and destined for a regional facility to conform to applicable packaging and transportation requirements and regulations. Such procedures shall include but are not limited to:

(a) periodic inspections of packaging and shipping practices;

(b) periodic inspections of waste containers while in the custody of carriers; and

(c) appropriate enforcement actions with respect to violations;

(2) agrees that after receiving notification from a host state that a person in the party state has violated applicable packaging, shipping or transportation requirements or regulations, it shall take appropriate action to ensure that violations do not recur. Appropriate action may include but is not limited to the requirement that a bond be posted by the violator to pay the cost of repackaging at the regional facility and the requirement that future shipments be inspected;

(3) may impose fees to recover the cost of the practices provided for in paragraphs (2) and (3) of this subsection;

(4) shall maintain an inventory of all generators within the state that may have low-level waste to be managed at a regional facility; and

(5) may impose requirements or regulations more stringent than those required by this subsection.

ARTICLE 4

BOARD APPROVAL OF REGIONAL FACILITIES

A. Within ninety days after being requested to do so by a party state, the board shall approve or disapprove a regional facility to be located within that state.

B. A regional facility shall be approved by the board if and only if the board determines that:

(1) there will be, for the foreseeable future, sufficient demand to render operation of the proposed facility economically feasible without endangering the economic feasibility of operation of any other regional facility; and

(2) the facility will have sufficient capacity to serve the needs of the region for a reasonable period of years.

ARTICLE 5

SURCHARGES

A. The board shall impose a "compact surcharge" per unit of waste received at any regional facility. The surcharge shall be adequate to pay the costs and expenses of the board in the conduct of its authorized activities and may be increased or decreased as the board deems necessary.

B. A host state may impose a "state surcharge" per unit of waste received at any regional facility within the state. The host state may fix and change the amount of the state surcharge subject to approval by the board. Money received from the state surcharge may be used by the host state for any purpose authorized by its own law, including but not limited to costs of licensure and regulatory activities related to the regional facility, reserves for decommissioning and long-term care of the regional facility and local impact assistance.

ARTICLE 6

THE BOARD

A. The "Rocky Mountain Low-Level Radioactive Waste Board" is created.

B. The board shall consist of one member from each party state. Each party state shall determine how and for what term its member shall be appointed, and how and for what term any alternate may be appointed to perform that member's duties on the board in the member's absence.

C. Each party state is entitled to one vote. A majority of the board constitutes a quorum. Unless otherwise provided in this compact, a majority of the total number of votes on the board is necessary for the board to take any action.

D. The board shall meet at least once a year and otherwise as its business requires. Meetings of the board may be held in any place within the region deemed by the board to be reasonably convenient for the attendance of persons required or entitled to attend and where adequate accommodations may be found. Reasonable public notice and opportunity for comment shall be given with respect to any meeting; provided, however, that nothing in this subsection shall preclude the board from meeting in executive session when seeking legal advice from its attorneys or when discussing the employment, discipline, or termination of any of its employees.

E. The board shall pay necessary travel and reasonable per diem expenses of its members, alternates and advisory committee members.

F. The board shall organize itself for the efficient conduct of its business. It shall adopt and publish rules consistent with this compact regarding its organization and procedures. In special circumstances the board, with unanimous consent of its members, may take actions by telephone; provided, however, that any action taken by telephone shall be confirmed in writing by each member within thirty days. Any action taken by telephone shall be noted in the minutes of the board.

G. The board may use for its purposes the services of any personnel or other resources which may be offered by any party state.

H. The board may establish its offices in space provided for that purpose by any of the party states or, if space is not provided or is deemed inadequate, in any space within the region selected by the board.

I. Consistent with available funds, the board may contract for necessary personnel services and may employ such staff as it deems necessary to carry out its duties. Staff shall be employed without regard for the personnel, civil service or merit system laws of any of the party states and shall serve at the pleasure of the board. The board may provide appropriate employee benefit programs for its staff.

J. The board shall establish a fiscal year which conforms to the extent practicable to the fiscal years of the party states.

K. The board shall keep an accurate account of all receipts and disbursements. An annual audit of the books of the board shall be conducted by an independent certified public accountant, and the audit report shall be made a part of the annual report of the board.

L. The board shall prepare and include in the annual report a budget showing anticipated receipts and disbursements for the ensuing year.

M. Upon legislative enactment of this compact, each party state shall appropriate seventy thousand dollars ($70,000) to the board to support its activities prior to the collection of the compact surcharge imposed pursuant to Subsection A of Article 5 of this compact.

N. The board may accept any donations, grants, equipment, supplies, materials or services, conditional or otherwise, from any source. The nature, amount and condition, if any, attendant upon any donation, grant or other resources accepted pursuant to this subsection, together with the identity of the donor or grantor, shall be detailed in the annual report of the board.

O. In addition to the powers and duties conferred upon the board pursuant to other provisions of this compact, the board:

(1) shall submit communications to the governors and to the presiding officers of the legislatures of the party states regarding the activities of the board, including an annual report to be submitted by December 15;

(2) may assemble and make available to the governments of the party states and to the public through its members information concerning low-level waste management needs, technologies and problems;

(3) shall keep a current inventory of all generators within the region, based upon information provided by the party states;

(4) shall keep a current inventory of all regional facilities, including information on the size, capacity, location, specific wastes capable of being managed and the projected useful life of each regional facility;

(5) may keep a current inventory of all private low-level waste facilities in the region, based upon information provided by the party states;

(6) shall ascertain on a continuing basis the needs for regional facilities and capacity to manage each of the various classes of low-level waste;

(7) may develop a regional low-level waste management plan;

(8) may establish such advisory committees as it deems necessary for the purpose of advising the board on matters pertaining to the management of low-level waste;

(9) may contract as it deems appropriate to accomplish its duties and effectuate its powers; but no contract made by the board shall bind any party state;

(10) shall make suggestions to appropriate officials of the party states to ensure that adequate emergency response programs are available for dealing with any exigency that might arise with respect to low-level waste transportation or management;

(11) shall prepare contingency plans, with the cooperation and approval of the host state, for management of low-level waste in the event any regional facility should be closed;

(12) may examine all records of operators or regional facilities pertaining to operating costs, profits or the assessment or collection of any charge, fee or surcharge;

(13) shall have the power to sue; and

(14) when authorized by unanimous vote of its members, may intervene as of right in any administrative or judicial proceeding involving low-level waste.

ARTICLE 7

PROHIBITED ACTS AND PENALTIES

A. It shall be unlawful for any person to dispose of low-level waste within the region, except at a regional facility, provided however that a generator who, prior to January 1, 1982, had been disposing of only his own waste on his own property may, subject to applicable federal and state law, continue to do so.

B. After January 1, 1986, it shall be unlawful for any person to export low-level waste which was generated within the region outside the region unless authorized to do so by the board. In determining whether to grant such authorization, the factors to be considered by the board shall include, but not be limited to, the following:

(1) the economic impact of the export of the waste on the regional facilities;

(2) the economic impact on the generator of refusing to permit the export of the waste;

(3) the availability of a regional facility appropriate for the disposal of the waste involved.

C. After January 1, 1986, it shall be unlawful for any person to manage any low-level waste within the region unless the waste was generated within the region or unless authorized to do so both by the board and by the state in which said management takes place. In determining whether to grant such authorization, the factors to be considered by the board shall include, but not be limited to, the following:

(1) the impact of importing waste on the available capacity and projected life of the regional facilities;

(2) the economic impact on the regional facilities;

(3) the availability of a regional facility appropriate for the disposal of the type of waste involved.

D. It shall be unlawful for any person to manage in a regional facility any radioactive waste other than low-level waste as defined in this compact, unless authorized to do so both by the board and the host state. In determining whether to grant such authorization, the factors to be considered by the board shall include, but not be limited to, the following:

(1) the impact of allowing such management on the available capacity and projected life of the regional facilities;

(2) the availability of a facility appropriate for the disposal of the type of waste involved;

(3) the existence of transuranic elements in the waste;

(4) the economic impact on the regional facilities.

E. Any person who violates subsection A or B of this article shall be liable to the board for a civil penalty not to exceed ten times the charges which would have been charged for disposal of the waste at a regional facility.

F. Any person who violates subsection C or D of this article shall be liabe to the board for a civil penalty not to exceed ten times the charges which were charged for management of the waste at a regional facility.

G. The civil penalties provided for in subsections E and F of this article may be enforced and collected in any court of general jurisdiction within the region where necessary personal jurisdiction is obtained by an appropriate proceeding commenced on behalf of the board by the attorney general of the party state wherein the proceeding is brought or by other counsel authorized by the board. In any such proceeding, the board, it it prevails, is entitled to recover reasonable attorney's fees as part of its costs.

H. Out of any civil penalty collected for a violation of subsection A or B of this article, the board shall pay to the appropriate operator a sum sufficient in the judgment of the board to compensate the operator for any loss of revenue attributable to the violation. Such compensation may be subject to state and compact surcharges as if received in the normal course of the operator's business. The remainder of the civil penalty collected shall be apportioned by the board among the regional facility long-term care funds existing in the region.

I. Any civil penalty collected for a violation of subsection C or D of this article shall be apportioned by the board among the regional facility long-term care funds existing in the region.

J. Violations of subsection A, B, C, or D of this article may be enjoined by any court of general jurisdiction within the region where necessary personal jurisdiction is obtained in any appropriate proceeding commenced on behalf of the board by the attorney general of the party state wherein the proceeding is brought or by other counsel authorized by the board. In any such proceeding, the board, if it prevails, is entitled to recover reasonable attorney's fees as part of its costs.

ARTICLE 8

ELIGIBILITY, ENTRY INTO EFFECT, CONGRESSIONAL CONSENT, WITHDRAWAL, EXCLUSION

A. Arizona, Colorado, Nevada, New Mexico, Utah and Wyoming are eligible to become parties to this compact. Any other state may be made eligible by unanimous consent of the board.

B. An eligible state may become a party state by legislative enactment of this compact or by executive order of its governor adopting this compact; provided, however, a state becoming a party by executive order shall cease to be a party state upon adjournment of the first general session of its legislature convened thereafter, unless before such adjournment the legislature shall have enacted this compact.

C. This compact shall take effect when it has been enacted by the legislatures of two eligible states. However, subsections B and C of article 7 shall not take effect until Congress has by law consented to this compact. Every five years after such consent has been given, Congress may by law withdraw its consent.

D. A state which has become a party state by legislative enactment may withdraw by legislation repealing its enactment of this compact; but no such repeal shall take effect until two years after enactment of the repealing legislation. If the withdrawing state is a host state, any regional facility in that state shall remain available to receive low-level waste generated within the region until five years after the effective date of the withdrawal; provided, however, this provision shall not apply to the existing facility in Beatty, Nevada.

E. A party state may be excluded from this compact by a two-thirds' vote of the members representing the other party states, acting in a meeting, on the ground that the state to be excluded has failed to carry out its obligations under this compact. Such an exclusion may be terminated upon a two-thirds' vote of the members acting in a meeting.

ARTICLE 9

CONSTRUCTION AND SEVERABILITY

A. The provisions of this compact shall be broadly construed to carry out the purposes of the compact.

B. Nothing in this compact shall be construed to affect any judicial proceeding pending on the effective date of this compact.

C. If any part or application of this compact is held invalid, the remainder, or its application to other situations or persons, shall not be affected.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

PROPOSED 274i AGREEMENT

The State of ____________ (State) is a member of the ____________ Compact which was ratified by Congress on ______________ pursuant to the Low-Level Radioactive Waste Policy Act, (Waste Policy Act) P.L. 96-573. The Waste Policy Act was enacted by Congress to provide for and encourage states to manage low-level radioactive waste on a regional basis, and to this end authorizes states to enter into such compacts as may be necessary to provide for the establishment and operation of regional disposal facilities for low-level radioactive waste. The __________ Compact contemplates that the State will make periodic unannounced inspections of the premises of low-level radioactive waste packaging and transport activities and areas of generators located within its borders if shipments of such waste are destined for a low-level waste facility located in a Compact state.

The United States Nuclear Regulatory Commission (NRC or Commission) has the statutory responsibility to inspect its licensees to determine compliance with NRC requirements, including requirements pertaining to the shipment, packaging and transportation of low-level radioactive waste. In the exercise of this responsibility, the Commission regularly conducts a review of the transportation programs of its licensees including the licensees' procedures for quality assurance, packaging, marking, labeling and loading of vehicles. This transportation program review usually has been found adequate to ensure licensee compliance with the Commission's regulations regarding low-level radioactive waste packaging and transportation without the need for Commission inspection of each individual shipment.

Under Section 274i. of the Atomic Energy Act of 1954, as amended, the Commission in carrying out its licensing and regulatory responsibilities under the Act is authorized to enter into agreements with any State to perform inspections or other functions on a cooperative basis as the Commission deems approriate. While the Commission does not normally conduct on-site inspections of individual low-level waste shipments of its licensees, it desires to foster the goals of the Waste Policy Act and the ________ Compact.

Accordingly, this agreement between the State of ____________ and the NRC establishes mutually agreeable procedures whereby the State may perform inspection functions for and on behalf of the Commission at certain NRC reactor and materials licensees' facilities which generate low-level radioactive waste.

It is hereby agreed between the Commission and the State as follows:

1. The Commission hereby authorizes the State to perform, for and on behalf of the Commission, the following functions with respect to low-level radioactive waste, as defined in Section 2(2) of the Waste Policy Act, in the possession of Commission licensees located within the State:

    a) Inspections to determine compliance with the Commission's rules and regulations regarding the packaging and transportation of low-level waste destined for disposal at a commercial low-level radioactive waste disposal site, and

b) Notification of Commission licensees and the Commission in writing of any violation of Commission regulations disclosed by such inspections, and to request the licensees concerned to advise the State and the Commission of corrective action taken or to be taken.

The Commission will not evaluate the State's ability to perform such functions. Such functions as are performed by the State pursuant hereto shall be performed without cost or expense to the Commission.

2. The authority to inspect NRC licensees pursuant to the preceding paragraph is limited to the licensee's low-level waste packaging, packaging procedures, and transport vehicles.

3. In taking any action authorized hereunder, the State shall not undertake to amend or revoke Commission licenses. This agreement, however, shall not be construed to preclude the State from exercising any authority lawfully available to it under its own laws.

4. Efforts will be made by both parties to avoid duplicative enforcement action against an NRC licensee for the same violation. However, this is not meant to preclude appropriate complementary actions for the same

violation, such as termination of a user permit by the State and NRC enforcement action.

5. Nothing herein shall be deemed to authorize the State to inspect or otherwise enter the premises of any licensee of the Commission which is a Federal instrumentality without the prior consent of the licensee.

6. Nothing herein shall be deemed to preclude or affect in any manner the authority of the Commission to perform any or all of the functions described herein.

7. Nothing herein is intended to restrict or expand the statutory authority of NRC or the State or to affect or vary the terms of any agreement in effect under the authority of Section 274b. of the Atomic Energy Act of 1954, as amended.

8. Nothing herein shall be deemed to permit the State to impose packaging or transport standards beyond those contained in Federal standards.

9. The principal NRC contact under this agreement shall be (Regional Administrator). The principal State contact shall be ________________.

10. This Agreement shall become effective upon signing by the ______________ , State of __________ and __________, Nuclear Regulatory Commission and shall remain in effect so long as the State remains a member of the _____________ Compact unless sooner terminated by either party on thirty days prior written notice.

For the Nuclear Regulatory Commission

____

For the State of ________________

____

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Mr. Leonard Slosky
Assistant to the Governor for
Science and Technology
State of Colorado
Executive Chambers
136 State Capitol
Denver, CO 80203

FEB 1 1982

Dear Mr. Slosky:

In connection with our comments on the draft (December 22, 1981) Central Interstate Low-Level Radioactive Waste Compact we focused on two issues that are also relevant to the Rocky Mountain Low-Level Radioactive Waste Compact and go beyond those discussed in our letter to you dated January 5, 1982. These issues are the scope of the compact and the restriction on export of waste.

Accordingly, we have enclosed a copy of our comment letter dated January 28. 1982 to Mr. E. Frank Wilson, Director, Division of Environmental Health Protection, Arkansas Department of Health, who is the contact for the Central State group.

As we continue to comment on additional compacts and recognize potential problem areas that are common to a number of compacts, we shall keep you informed.

Sincerely,

/s/

G. Wayne Kerr, Director
Office of State Programs

Enclosure:
As stated

cc: Charles F. Tedford, Arizona, w/encl.
Ace Martelle, Nevada, w/encl.
Bruce Garber, New Mexico, w/encl.
Al Rickers, Utah, w/encl.
Walt Ackerman, Wyoming, w/encl.
Doug Larson, WIEB, w/encl.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JAN 2 8 1982

Mr. E. Frank Wilson, Director
Division of Environmental Health Protection
Arkansas Department of Health
4815 West Markham Street
Little Rock, AR 72201

Dear Mr. Wilson:

Thank you for your letter dated January 4, 1982 in which you requested our assistance and comments on the working draft (December 22, 1981) of the "Central Interstate Low-Level Radioactive Waste Compact."

We would like to congratulate the negotiators of the eligible party States of Arkansas, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, North Dakota and Oklahoma who realized an excellent working draft within a short time frame.

There are five major areas of concern to us: (1) the scope of the compact, (2) State inspection and enforcement of NRC licensees, (3) the restriction on export of waste, (4) the settlement of disputes, and (5) inappropriate authority of the Compact Commission over NRC. They are discussed below.

1. The scope of the compact

In Article II there are several interlocking definitions that raise a question about the scope of the compact. "Facility" is defined as any site, location, structure or property used or to be used for the "management of waste." The latter term is defined as meaning the "storage," "treatment," or disposal of waste. "Storage" is defined as the holding of waste for treatment or disposal. "Treatment" is defined very broadly as any activity, including storage for decay, that results in a change in physical, chemical, or biological character of the wastes so that the waste can be safer for transport, amenable for recovery, recyclable, or reducible in volume. Thus, under the compact, a regional facility if it is "approved by the (Compact) Commission for the benefit of the party States" can be one established merely to hold waste for decay and recycle or recovery, since the central concept of Article III.a. of the compact is a regional facility to manage, not just dispose of, all waste generated in the region. Thus, in terms of the interlocking definitions and the central concept of Article III, the regional program suggested by the draft language goes far beyond "disposal" of low level waste into practically every aspect of low-level radioactive waste handling. Article III.g.3. also reinforces this view. It would require that a generator receive Compact Commission approval before moving any waste off the site of generation "for purposes of management" except to a regional facility.

Accordingly, the Compact Commission and its facilities would, under this compact, appear to be granted a monopoly on all low-level radioactive waste storage and treatment, as well as disposal, once the waste leaves the generator's site. Article III.g.3. also appears to have the effect of excluding waste brokers from operating in the region unless authorized by the Commission.

In our view the Low-Level Radioactive Waste Policy Act (P.L. 96-573) (Act) only provides authority to enter into regional interstate compacts limited to regional disposal facilities for low-level waste, as stated in Section 4(a)(2)(A). This section is the operative grant of authority to the States, and establishes the scope of the authority granted to the State under the Act. The State authority is further limited by the Act's definition of disposal as the "isolation" of low-level waste. Thus, we believe the better view of the Act is that its scope is limited to disposal, as commonly understood to be activities at the disposal site. The Act does not confer any additional authority over that which might already be obtained in a State with respect to generation of wastes, transportation, volume reduction activities at non-disposal sites, and similar activities that do not constitute disposal. Thus, even Article I, Policy and Purpose, which states that it is the policy of the Act to authorize compacts for the management of low-level radioactive waste goes beyond the words of the Act.

2. State inspection and enforcement of NRC licensees

Article III.e raises questions of the appropriateness of State inspection and enforcement activities of NRC licensees. We believe the onsite inspection of NRC licensees can be satisfactorily accommodated by an agreement between NRC and each of the States in the compact. Specifically, under section 274i of the Atomic Energy Act, NRC has the authority to enter agreements with States to perform inspections. We have drafted a proposed agreement (enclosed) which would authorize a State to inspect waste packaging on the premises of NRC licensees. Any State law enforcement based on findings from these inspections would be under State law, not under the Atomic Energy Act. A section 274i agreement is separate and distinct from the agreement entered into between NRC and a State under the "Agreement State" regulatory program; the latter is accomplished only by entering into an agreement under section 274b of the Atomic Energy Act. Of the States listed in Article VII, the States of Arkansas, Kansas, Louisiana, Nebraska and North Dakota are Agreement States. Iowa, Minnesota, Missouri and Oklahoma are not. In our view a 274i agreement can be entered into by a State whether or not it has a 274b agreement.

3. The restriction on export of waste

In Article III.g.2. there is a restriction on export of waste unless authorized by the Commission. The Low-Level Radioactive Waste Policy Act allows State restriction only on the import of out-of-region waste for disposal in a regional site. Although the economic motives underlying the restriction on export are understandable, the restriction goes beyond the terms of the Act, and could be viewed as an unauthorized and unconstitutional burden on interstate commerce. On the assumption that by 1986 all States will be included in regions with mutually reinforcing restrictions on importation we would question the need for a stated prohibition on export.

4. The settlement of disputes

Article IV.1. provides that a dispute between a party State and the Commission shall be reviewed in a U.S. Court of Appeals. The jurisdiction of the U.S. Courts of Appeals is limited to review of decisions from U.S. District Courts (28 U.S.C. 1291), and the final orders of selected Federal regulatory Commissions under the Hobbes Act (28 U.S.C. 2341). None of these statutes confer jurisdiction over the type of dispute referenced in the compact, i.e., between a State and a compact Commission. Nor does it appear that a question (i.e., a question of interpretation of the compact) of Federal law would necessarily be involved in the kinds of grievances a party State may have against the Commission acting under the compact or vice versa. Accordingly, it appears to us inappropriate to include Article IV.1. in the compact.

Analysis of the text of the compact indicates that a principal reason for needing a dispute review mechanism is the authority given the Commission to engage in a selection process when there is no volunteer host State, including _requiring_ a selected host State to process an application. Yet a primary criterion for licensability of a site--State or federal ownership of the operating site--is not covered in the compact. Thus, except for sites located on federal land, any selected host State can effectively veto a site within its boundaries, even though it goes through the procedures of licensing (if an Agreement State) by refusing to accept title to the site. If NRC is licensing, the refusal to accept title makes the site _per se_ unlicensable.

The need for "judicial" review of disputes between a party State and the Commission could be eliminated if the compact were revised so that it would be obligatory for a selected party State to be a host State when selected for the role by procedures incorporated in the compact. Then, if a party State refuses to perform its obligation under the compact, one or more of the other party States has a basis for taking action in the U.S. Supreme Court (28 U.S.C. 1251).

Apparently in lieu of making the host State selection obligatory, the draftsmen of the compact have chosen to provide a procedure for the Commission to revoke the membership of a party State that refuses to accept its selection as a host State, but only after a judicial review has found that the party State has arbitrarily or capriciously denied or delayed the issuance of a license. (See Article V.g.). This provision might well prove unworkable. It would be exceedingly difficult to show that State action is arbitrary or capricious if the State has any set of facts that reasonably support its action. In view of the complexity and uncertainty involved in siting, it is hard to imagine a State not being able to muster sufficient supporting facts to support its action or inaction.

5. Inappropriate authority of the Compact Commission over NRC

The authority given the Commission in Article V.e.2. to require the NRC to process all applications for permits and licenses for a selected site is inappropriate. No other body besides the Congress through new legislation can direct the NRC to do this.

Some other comments that may be helpful follow:

Article II. Definitions

1. Article II.b contains a definition of disposal which may make it difficult to distinguish disposal from storage. We recommend that the definition be amended to mean isolation of radioactive wastes from the biosphere by emplacement in a facility for burial in land.

2. Article II.k contains a definition of regional facility that is not consistent with Article V.f which provides Commission authority to select sites in the absence of volunteered sites. We recommend that the definition be amended on line 8 by inserting the words "or selected" after "approved."

3. Article II.o defines low-level radioactive wastes as "constituting radioactive nuclides in concentrations which exceed standards for unrestricted release..." This definition might serve to exclude certain low-level radioactive waste streams (such as liquid scintillation wastes) from burial in a regional disposal facility. This exclusion could pose a problem at a later time if there is a lack of capacity at hazardous waste facilities to dispose of such materials. Furthermore, the definition of waste might also potentially include naturally occurring and accelerator-produced radioactive materials (NARM) as waste in some States. If this is the intent, it should be made more explicit.

Attachment 2 - A
Question 14

We believe that these ambiguities could be eliminated if the compact adhered to the definition of low-level radioactive waste as given in the Low-Level Radioactive Waste Policy Act (Public Law 96-573).

Article III. Rights and obligations

1. Article III.e, as it reads, implies varying and inconsistent regulations between host and party States, rather than regulations consistent with federal regulations. Accordingly, to clarify the issue, we suggest the deletion of the words "of host state" on the last line of Article III.e.

Article IV. The Commission

1. Article IV.m.3 authorizes the Compact Commission to hear and negotiate disputes which may arise between the party States regarding this compact. We suggest that this section be reworded to exclude regulatory disputes pertaining to health and safety issues.

2. This compact does not outline whether the party States are able to impose surcharges on waste generators to recover costs incurred for inspection, enforcement, and emergency response functions. Have you considered permitting party States to seek compensation from waste generators for performing these regulatory functions? (See Recommendations 3 and 7, "Report to the State Planning Council on Radioactive Management, Prepared by the Transportation Workshop, May 1, 1981.)

Article V. Development and operation of facilities

1. Article V.c.3 states that the Compact Commission is to review an application for a disposal facility based upon consideration of the applicant's financial assurances. Have you considered what types of financial assurances are being demanded of the applicant?

2. Article V.e.1 allows the Compact Commission to authorize the operator or operators whose proposal or proposals have been selected to pursue development following notification of each party State of the results of the preliminary selection process. This section could be interpreted to give the Compact Commission authority to authorize pre-licensing construction at the disposal site. Major construction before completion of licensing is prohibited currently by 10 CFR Part 51, and is a feature of proposed 10 CFR Part 61. The operator should have the authorization to develop necessary documentation, application and everything else necessary for licensing.

Article VI. Other laws and regulations

The following two comments are based on revisions of the State Planning Council model compact by the Midwest Compact Group.

1. Article VI.a.5 may be too restrictive because it deals with only judicial proceedings that should not be affected by the compact. You may want to consider administrative proceedings as well, e.g., licensing applications.

2. Lines 10 and 11 of Article VI.d appear to be vague. The words "restrict", "make more costly", or "inconvenient access" are subject to various kinds of interpretations. You may want to consider rewording these lines as follows: "or instrumentality thereof may be applied so as to discriminate against any regional..."

Article IX. Severability and Construction

1. Although this article is a verbatim copy of the model compact developed by the State Planning Council on Radioactive Waste Management, we believe that some additional clarification may be desireable. Accordingly, in line 2 after "declared" insert "by a court of competent jurisdiction..."

We continue to believe that the Central States are to be complimented for their work on compact formation. We look forward to working with you to achieve a successful conclusion of this compact effort.

Sincerely,

G. Wayne Kerr, Director
Office of State Programs

Enclosure:
Proposed 274i Agreement

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

PROPOSED 274i AGREEMENT

The State of ____________ (State) is a member of the ____________ Compact which was ratified by Congress on ________________ pursuant to the Low-Level Radioactive Waste Policy Act, (Waste Policy Act) P.L. 96-573. The Waste Policy Act was enacted by Congress to provide for and encourage states to manage low-level radioactive waste on a regional basis, and to this end authorizes states to enter into such compacts as may be necessary to provide for the establishment and operation of regional disposal facilities for low-level radioactive waste. The ___________ Compact contemplates that the State will make periodic unannounced inspections of the premises of low-level radioactive waste packaging and transport activities and areas of generators located within its borders if shipments of such waste are destined for a low-level waste facility located in a Compact state.

The United States Nuclear Regulatory Commission (NRC or Commission) has the statutory responsibility to inspect its licensees to determine compliance with NRC requirements, including requirements pertaining to the shipment, packaging and transportation of low-level radioactive waste. In the exercise of this responsibility, the Commission regularly conducts a review of the transportation programs of its licensees including the licensees' procedures for quality assurance, packaging, marking, labeling and loading of vehicles. This transportation program review usually has been found adequate to ensure licensee compliance with the Commission's regulations regarding low-level radioactive waste packaging and transportation without the need for Commission inspection of each individual shipment.

Under Section 274i. of the Atomic Energy Act of 1954, as amended, the Commission in carrying out its licensing and regulatory responsibilities under the Act is authorized to enter into agreements with any State to perform inspections or other functions on a cooperative basis as the Commission deems approriate. While the Commission does not normally conduct on-site inspections of individual low-level waste shipments of its licensees, it desires to foster the goals of the Waste Policy Act and the ________ Compact.

Accordingly, this agreement between the State of ____________ and the NRC establishes mutually agreeable procedures whereby the State may perform inspection functions for and on behalf of the Commission at certain NRC reactor and materials licensees' facilities which generate low-level radioactive waste.

It is hereby agreed between the Commission and the State as follows:

1. The Commission hereby authorizes the State to perform, for and on behalf of the Commission, the following functions with respect to low-level radioactive waste, as defined in Section 2(2) of the Waste Policy Act, in the possession of Commission licensees located within the State:

    a) Inspections to determine compliance with the Commission's rules and regulations regarding the packaging and transportation of low-level waste destined for disposal at a commercial low-level radioactive waste disposal site, and

b) Notification of Commission licensees and the Commission in writing of any violation of Commission regulations disclosed by such inspections, and to request the licensees concerned to advise the State and the Commission of corrective action taken or to be taken.

The Commission will not evaluate the State's ability to perform such functions. Such functions as are performed by the State pursuant hereto shall be performed without cost or expense to the Commission.

2. The authority to inspect NRC licensees pursuant to the preceding paragraph is limited to the licensee's low-level waste packaging, packaging procedures, and transport vehicles.

3. In taking any action authorized hereunder, the State shall not undertake to amend or revoke Commission licenses. This agreement, however, shall not be construed to preclude the State from exercising any authority lawfully available to it under its own laws.

4. Efforts will be made by both parties to avoid duplicative enforcement action against an NRC licensee for the same violation. However, this is not meant to preclude appropriate complementary actions for the same

violation, such as termination of a user permit by the State and NRC enforcement action.

5. Nothing herein shall be deemed to authorize the State to inspect or otherwise enter the premises of any licensee of the Commission which is a Federal instrumentality without the prior consent of the licensee.

6. Nothing herein shall be deemed to preclude or affect in any manner the authority of the Commission to perform any or all of the functions described herein.

7. Nothing herein is intended to restrict or expand the statutory authority of NRC or the State or to affect or vary the terms of any agreement in effect under the authority of Section 274b. of the Atomic Energy Act of 1954, as amended.

8. Nothing herein shall be deemed to permit the State to impose packaging or transport standards beyond those contained in Federal standards.

9. The principal NRC contact under this agreement shall be (Regional Administrator). The principal State contact shall be ________________.

10. This Agreement shall become effective upon signing by the _____________ State of __________ and __________, Nuclear Regulatory Commission and shall remain in effect so long as the State remains a member of the _____________ Compact unless sooner terminated by either party on thirty days prior written notice.

For the Nuclear Regulatory Commission

____

For the State of _________________

____

ARKANSAS DEPARTMENT OF HEALTH
4815 West Markham Street
Little Rock, Ark. 72201

Ben N. Saltzman, M.D.
Director

Frank White
Governor

January 4, 1982

Mr. G. Wayne Kerr
Assistant Director for State
Agreements Program
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Wayne:

Per our conversation this date, I am enclosing the draft copy of our Low-Level Waste Compact for your assistance and comments. As I said on the phone, we are having our final meeting on this compact some time during the last week of this month, and I would appreciate your staff's comments prior to this meeting. I will let you know when I have a date for this meeting.

Thanks a million.

Sincerely,

E. Frank Wilson, Director
Division of Environmental Health Protection

EFW:ne

Encl.

CENTRAL INTERSTATE LOW-LEVEL RADIOACTIVE WASTE COMPACT

WORKING DRAFT APPROVED 12-22-81

Attachment 2 - C
Question 14

ARTICLE I. POLICY AND PURPOSE

The party states recognize that each state is responsible for the management of its non-federal low-level radioactive wastes. They also recognize that the Congress, by enacting the Low-Level Waste Policy Act (P.L. 96-573) has authorized and encouraged states to enter into compacts for the efficient management of wastes. It is the policy of the party states to cooperate in the protection of the health, safety and welfare of their citizens and the environment and to provide for and encourage the economical management of low-level radioactive wastes. It is the purpose of this compact to provide the framework for such a cooperative effort; to promote the health, safety and welfare of the citizens and the environment of the region; to limit the number of facilities needed to effectively and efficiently manage low-level radioactive wastes and to encourage the reduction of the generation thereof; and to distribute the costs, benefits and obligations among the party states.

ARTICLE II. DEFINITIONS

As used in this compact, unless the context clearly requires a different construction:

a. "Commission" means the Central Interstate Low-Level Radioactive Waste Commission;

b. "disposal" means the isolation and final disposition of waste;

c. "facility" means any site, location, structure or property used or to be used for the management of waste;

d. "generator" means any person who, in the course of or as an incident to manufacturing, power generation, processing, medical diagnosis and treatment, biomedical research, other industrial or commercial activity, other research or mining in a party state produces or processes waste. "Generator" does not include any person who receives waste generated outside the region for subsequent shipment to a regional facility;

e. "host state" means a party state in which a regional facility is situated or is being developed;

f. "management of waste" means the storage, treatment or disposal of waste;

g. "notification of each party state" means transmittal of written notice to the governor, presiding officer of each legislative body and any other persons designated by the party state's Commission member to receive such notice;

h. "party state" means any state which is a signatory party to this compact;

i. "person" means any individual, corporation, business enterprise or other legal entity (either public or private);

j. "region" means the area of the party states;

k. "regional facility" means a facility which is located within the region and which has been approved by the Commission for the benefit of the party states;

l. "state" means a state of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands or any other territorial possession of the United States;

m. "storage" means the holding of waste for treatment or disposal;

n. "treatment" means any method, technique or process, including storage for decay, designed to change the physical, chemical or biological characteristics or composition of any waste in order to render such waste safer for transport, amenable for recovery, convertible to another usable material or reduced in volume;

o. "waste" means low-level radioactive waste constituting radioactive nuclides in concentrations which exceed standards for unrestricted release and which is not classified as high-level radioactive waste, transuranic waste or spent fuel or by-product material as defined in Section 11e(2) of the Atomic Energy Act of 1954 as amended.

ARTICLE III. RIGHTS AND OBLIGATIONS

a. There shall be provided within the region at least one facility with sufficient capacity to manage all wastes generated within the region. Each party state shall have the right to have the wastes generated within its borders managed at such facility.

b. To the extent authorized by federal law and host state law, a host state shall regulate and license any facility within its borders and ensure the extended care of such facility.

c. Rates set by the operator of a regional facility shall be fair and reasonable and be subject to the approval of the host state.

d. A host state may establish a fee system, which shall be in addition to the rate approved pursuant to section (c) of this Article, for any regional facility within its borders. Such a fee system shall be reasonable and shall provide the host state with sufficient revenue to cover any costs associated with such facilities. If such fee system has been reviewed and approved by the Commission and to the extent that such revenue is insufficient, all party states shall share the costs in a manner to be determined by the Commission.

e. To the extent authorized by federal law, each party state is responsible for enforcing any applicable federal and state laws and regulations pertaining to the packaging and transportation of waste generated within or passing through its borders and hereby agrees to adopt practices that will ensure that waste shipments originating within its borders and destined to a regional facility within another party state will conform to the applicable package and transportation laws and regulations of the host state.

f. Each party state has the right to rely on the good faith performance of each other party state of acts and courses of conduct which ensure the provisions of facilities for regional availability and use in a manner consistent with this compact.

g. After January 1, 1986:

1. it shall be unlawful for any person to deposit at a regional facility waste not generated within the region, and it shall be unlawful for a regional facility to accept waste not generated within the region, unless authorized to do so by the Commission pursuant to Article IV;
2. it shall also be unlawful for any person to export from the region waste which is generated within the region unless such exportation is in accordance with Article IV;
3. further, it shall be unlawful for any person to transport waste off the site at which it is generated for purposes of management except to a regional facility unless authorized by the Commission.

ARTICLE IV. THE COMMISSION

a. There is hereby established the Central Interstate Low-Level Radioactive Waste Commission. The Commission shall consist of one voting member from each party state to be appointed according to the laws of each state. The appointing authority of each party state shall notify the Commission in writing of the identity of its member and any alternates. An alternate may act on behalf of the member only in his absence. Each state is responsible for the expenses of its member of the Comission.

b. Each Commission member shall be entitled to one vote. No action of the Commission shall be binding unless a majority of the total membership cast their vote in the affirmative.

c. The Commission shall elect from among its member a chairman. The Commission shall adopt and publish, in convenient form, by-laws which are not inconsistent with this compact.

d. The Commission shall meet at least once a year and shall also meet upon the call of the chairman, by petition of a majority of the party states or upon the call of a host state.

e. The Commission may appear as an intervenor or party in interest before any court of law, or any federal, state or local agency, board or commission that has jurisdiction over the setting of rates or fees or the management of waste. The Commission shall determine in which proceedings or dockets it shall intervene or otherwise appear and may arrange for such expert testimony, reports, evidence or other participation in such proceedings as may be necessary to represent its views.

f. The Commission may establishg such advisory committees as it deems necessary for the purpose of advising the Commission on any and all matters pertaining to the management of waste.

g. The Commission may employ and compensate a staff limited to only those persons necessary to carry out its duties and functions. The Commission may also contract with and designate any person to perform necessary functions to assist the Commission. The staff shall serve at the Commission's pleasure irrespective of the Civil Service, personnel or other merit laws of any of the party states or the federal government and shall be compensated from funds of the Commission unless otherwise required by acceptance of a federal grant.

h. Funding for the Commission shall be provided as follows:

1. each eligible state, upon becoming a party state, shall pay $25,000 to the Commission which shall be used for operating costs of the Commission.

2. each state hosting a regional facility shall annually levy a surcharge on all users of such facilities, based upon the volume and characteristics of wastes received at such facilities, the total of which:

   (a) Shall be sufficient to cover the annual budget of the Commission;

   (b) shall represent the financial commitments of all party states to the Commission; and

   (c) shall be paid to the Commission, provided, however, that each host state collecting such fees or surcharges may retain a portion of the collection sufficient to cover its administrative costs of collection, and that the remainder be sufficient only to cover the approved annual budgets of the Commission.

3. The Commission shall set and approve its first annual budget as soon as practicable after its initial meeting. Host states shall begin imposition of the surcharges provided for in this section as soon as practicable and shall remit to the Commission funds resulting from collection of such surcharges within 60 days of their receipt.

i. The Commission shall keep accurate accounts of all receipts and disbursements. An independent certified public accountant shall annually audit all receipts and disbursements of Commission funds and submit an audit report to the Commission. Such audit report shall be made a part of the annual report of the Commission required by Article IV.

j. The Commission may accept for any of its purposes and functions any and all donations, grants of money, equipment, supplies, materials and services (conditional or otherwise) from any person and may receive, utilize and dispose of the same. The nature, amount and conditions, if any, attendant upon any donation or grant accepted pursuant to this paragraph, together with the identity of the donor, grantor or lendor, shall be detailed in the annual report of the Commission.

k. (1) Except as otherwise provided herein, nothing in this compact shall be construed to alter the incidence of liability of any kind for any act, omission, course of conduct, or on account of any casual or other relationships. Generators, transporters of waste, owners and operators of facilities shall be liable for their acts, omissions, conduct or relationships in accordance with all laws relating thereto.

(2) The Commission herein established is a legal entity separate and distinct from the party states and shall be so liable for its actions. Liabilities of the

Commission shall not be deemed liabilities of the party states. Members of the Commission shall not be personally liable for actions taken by them in their official capacity.

l. Any party state aggrieved by a final decision of the Commission may obtain judicial review of such decisions in the United States Court of Appeals in the circuit wherein the Commission maintains its headquarters by filing in such court a petition for review within 60 days after the Commission's final decision. Procedings thereafter shall be in accordance with the rules of procedures applicable in such court.

m. The Commission shall have the following duties and powers:

1. to receive and approve the application of a non-party state to become a party state in accordance with Article VII(b); and
2. to submit an annual report to, and otherwise communicate with, the governors and the presiding officers of the legislative bodies of the party states regarding the activities of the Commission; and
3. to hear and negotiate disputes which may arise between the party states regarding this compact; and
4. to require of and obtain from the party states, and non-party states seeking to become party states, data and information necessary to the implementation of Commission responsibilities; and

5. pursuant to Article V, to approve the development and operation of regional facilities; and
6. not withstanding any other provision of this compact, to enter into agreements with any person for the importation of waste into the region and for the right of access to facilities outside the region for waste generated within the region. Such authorization to import or export waste requires a majority vote of the Commission, including the affirmative vote of any host state which may be affected; and
7. to relieve, in accordance with Article__________, a party state of its obligation to serve as a host state; and
8. to revoke the membership of a party state in accordance with Article __________; and
9. to take such action as may be necessary to perform its duties and functions as provided in this compact.

ARTICLE V. DEVELOPMENT AND OPERATION OF FACILITIES

a. Following the collection of sufficient data and information from the states, the Commission shall allow each party state the opportunity to volunteer as a host for a regional facility.

b. If no state volunteers or if no proposal identified by a volunteer state is deemed acceptable by the Commission, based on the criteria enumerated in section (c) of this Article, then the Commission shall publicly seek applicants for the development and operation of regional facilities.

c. The Commission shall review and consider each applicant's proposal based upon the following considerations:

1. The capability of the applicant to obtain a license from the applicable authority for the proposed facility;
2. the economic efficiency of the proposed regional facility or regional facilities, including the total estimated disposal and treatment costs per cubic foot of waste;
3. financial assurance;
4. accessibility to all party states; and
5. such other criteria as shall be determined by the Commission to be necessary for the approval of the best proposal based upon the health, safety and welfare of the citizens of the region and the party states.

d. The Commission shall make a preliminary selection of the proposal or proposals considered most likely to meet the needs of the region.

e. Following notification of each party state of the results of the preliminary selection process, the Commission shall:

1. Authorize the operator or operators whose proposal or proposals have been selected to pursue development, licensure and operation of the proposed regional facility or facilities within the specified host state or states in accordance with the proposals as originally submitted to the Commission or as modified with the approval of the Commission; and
2. require the selected host state or states or the U.S. Nuclear Regulatory Commission to process all applications for permits and licenses relative to the development and operation of any authorized regional facility or facilities within a reasonable period from the time that a completed application is submitted to the appropriate state or federal permitting or licensing authority.

f. The preliminary selection or selections made by the Commission pursuant to this Article shall become final upon the issuance of a license by the licensing authority. If a proposed regional facility authorized by the Commission fails to become licensed, the Commission shall make another selection pursuant to the procedures identified in this Article.

g. The Commission may revoke the membership of any party state designated as a host state which, after judicial review, shall be found to have arbitrarily or capriciously denied or delayed the issuance of a license or permit to any operator authorized by the Commission to apply for such license or permit. Revocation shall take effect one year from the date the affected host state receives written notice from the Commission of its action. The Commission may require such affected state to pay any other host state or states, for a period not to exceed five years from date of notice of revocation, an amount equal to that which the generators of the affected state would have paid for fees to each regional facility and an amount equal to that which the affected state would have contributed to the annual budget of the Commission if such affected state would have remained a party state. All legal rights of the affected states established under this compact shall cease upon the effective date of revocation; however, any legal obligations of that state arising prior to the effective date of the revocation shall not cease until they have been fulfilled. Written notice of a revocation of such state's membership in the compact shall be transmitted immediately following the vote of the Commission by the chairman to the governor of the affected party state, all other governors of the party states and the Congress of the United States.

ARTICLE VI. OTHER LAWS AND REGULATIONS

a. Nothing in this compact shall be construed to:

1. Abrogate or limit the applicability of any act of Congress or diminish or otherwise impair the jurisdiction of any federal agency expressly conferred thereon by the Congress;
2. prevent the application of any law which is not otherwise inconsistent with this compact;
3. make unlawful the development and operation of any facility already licensed for development or operation on the date this compact becomes effective, except that any such facility shall comply with Article III and Article V and shall be subject to any action lawfully taken pursuant thereto;
4. prohibit or otherwise restrict the management of waste on the site where it is generated if such is otherwise lawful;
5. affect any judicial proceeding pending on the effective date of this compact;
6. alter the relations between, and the respective internal responsibilities of, the government of a party state and its subdivisions; and
7. affect the generation or management of waste generated by the federal government or federal research and development activities.

b. No party state shall pass or enforce any law or regulation which is inconsistent with this compact.

c. All laws and regulations or parts thereof of any party state which are inconsistent with this compact are hereby declared null and void for purposes of this compact. Any legal right, obligation, violation or penalty arising under such laws or regulations prior to enactment of this compact shall not be affected.

d. No law or regulations of a party state or of any subdivision or instrumentality thereof may be applied so as to restrict or make more costly or inconvenient access to any regional facility by the generators of another party state than for the generators of the state where the facility is situated.

WORKING DRAFT APPROVED 12-22-81

ARTICLE VII. ELIGIBLE PARTIES, WITHDRAWAL, REVOCATION ENTRY INTO FORCE, TERMINATION

a. This compact shall have as initially eligible parties the states of Arkansas, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, North Dakota and Oklahoma. Such initial eligibility shall terminate on January 1, 1984.

b. Any state may petition the Commission for eligibility. The petitioning state shall become eligible for membership in the compact upon the unanimous approval of the Commission. Any state becoming eligible upon such approval of the Commission shall become a member of the compact in the same manner as any state eligible for membership at the time this compact enters into force.

c. An eligible state shall become a member of the compact and shall be bound by it after such state has enacted the compact into law. In no event shall the compact take effect in any state until it has been entered into force as provided for in section (f) of this Article.

d. Any party state may withdraw from this compact by enacting a statute repealing the same. Unless permitted earlier by unanimous approval of the Commission, such withdrawal shall take effect five years after the governor of the withdrawing state has given notice in writing of the withdrawal to each governor of the party states. No withdrawal shall affect any liability already incurred by or chargeable to a party state prior to the time of such withdrawal.

e. Any party state which fails to comply with the terms of this compact or fulfill its obligations hereunder may, after notice and hearing, have its privileges suspended or its membership in the compact revoked by the Commission. Revocation shall take effect one year from the date the affected party state receives written notice from the Commission of its action. The Commission may require such affected state to pay any host state or states, for a period not to exceed five years, from the date of notice of revocation, an amount equal to that which the generators of the affected state would have paid for fees to each regional facility and an amount equal to that which the affected state would have contributed to the annual budget of the Commission if such affected state would have remained a party state. All legal rights of the affected party state established under this compact shall cease upon the effective date of revocation; however, any legal obligations of that party state arising prior to the effective date of revocation shall not cease until they have been fulfilled. Written notice of a revocation of a party state's membership in the compact shall be transmitted immediately following the vote of the Commission by the chairman to the governor of the affected party state, all other governors of the party states and the Congress of the United States.

f. This compact shall become effective after enactment by at least three eligible states and after consent has been given to it by Congress. Congress shall have an opportunity to withdraw such consent every five years. Failure of Congress to withdraw its consent affirmatively shall have the effect of renewing consent for an additional five year period. The consent given to this compact by the Congress shall extend to any future admittance of new party states under sections (b) and (c) of this Article and to the power of the region to ban the exportation of waste pursuant to Article III.

g. The withdrawal of a party state from this compact under section (d) of this Article or the revocation of a state's membership in this compact under section (e) of this Article shall not affect the applicability of this compact to the remaining party states.

h. This compact shall be terminated when all party states have withdrawn pursuant to section (d) of this Article.

ARTICLE VIII. PENALTIES

a. Each party state, consistent with its own law, shall prescribe and enforce penalties against any person not an official of another state for violation of any provision of this compact.

b. Each party state acknowledges that the receipt by a host state of waste packaged or transported in violation of applicable laws and regulations can result in sanctions which may include suspension or revocation of the violator's right of access to the facility in the host state.

ARTICLE IX. SEVERABILITY AND CONSTRUCTION

The provisions of this compact shall be severable and if any phrase, clause, sentence or provision of this compact is declared to be contrary to the Constitution of any participating state or of the United States or the applicability thereof to any government, agency, person or circumstance is held invalid, the validity of the remainder of this compact and the applicability thereof to any government, agency, person or circumstance shall not be affected thereby. If any provision of this compact shall be held contrary to the Constitution of any state participating therein, the compact shall remain in full force and effect as to the state affected as to all severable matters. The provisions of this compact shall be liberally construed to give effect to the purpose thereof.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAY 6 1982

Mr. Leonard Slosky, Chairman
Rocky Mountain States
Compact Negotiation Group
State of Colorado
Executive Chambers
136 State Capitol
Denver, CO 80203

Dear Mr. Slosky:

Thank you for your letter of March 19, 1982 in which you share with us your response to our earlier letter to you of January 5, 1982 with regard to the "Rocky Mountain Low-Level Radioactive Waste Compact." We also appreciate receiving a copy of the revised version of the State of Colorado House Bill No. 1246. The Rocky Mountain States are to be complimented for all the effort that they have concluded to date to realize a workable compact.

We are concerned with two issues that we addressed in our letter of February 1, 1982 but were not considered in your response. These issues are the scope of the compact and the restriction on export of waste which are discussed below. Following the discussion are some other comments that may be helpful.

1. The Scope of the Compact

In Article 2 the definitions of facility and management support the policy of waste management stated in Article 1 and thus raise a question about the scope of the compact. The emphasis on management, not just disposal of all wastes generated in the region, is also stated in Article 3.A. Thus, in terms of the definitions, the central concept, and the activities of the Compact Board, the draft language goes far beyond "disposal" of low-level radioactive waste into practically every aspect of low-level radioactive waste handling.

Of special concern to us is the possibility under the compact that the Compact Board may take on functions of a regional health, safety and environmental regulatory authority regarding all aspects of low-level radioactive waste management and therefore appear to duplicate the authority of the host Agreement State and/or the NRC. You note in your letter on page two that "The Board's approval of regional facilities is based solely on the two economic factors specified in Article 4.B." Furthermore, you emphasize that "The Board will in no way duplicate or review the health and safety determination made by an agreement State or the NRC in licensing a facility." Such a disclaimer written into the Rocky Mountain Compact would diminish our concern pertaining to the duplication of the authority of the host Agreement State and/or the NRC. It is our view that the Low-Level Radioactive Waste Policy Act (P.L. 96-573) only provides authority to enter into regional interstate compacts limited to regional disposal facilities for low-level waste, as stated in Section 4(a)(2)(A). Further, we do not believe health and safety regulatory frameworks beyond those currently provided for in the Atomic Energy Act need be established.

2. The Restriction on Export of Waste

Article 7 states that "After January 1, 1986, it shall be unlawful for any person to export low-level waste which was generated within the region outside the region unless authorized to do so by the board." The Low-Level Radioactive Waste Policy Act allows State restriction only on the import of out-of-region waste for disposal in a regional site. Although the economic motives underlying the restriction on export are understandable, the restriction goes beyond the terms of the Act, and could be viewed as an unauthorized and unconstitutional burden on interstate commerce. On the assumption that by 1986 all States will be included in regions with mutually reinforcing restrictions on importation, we would question the need for a stated prohibition on export.

Some other comments that might be helpful follow:

1. Article 1. Findings and Purpose

Article 1 states that "The party states agree that each state is responsible for providing for the management of low-level radioactive waste generated within its borders, except for waste generated as a result of defense activities of the federal government or federal research and development activities." Article 2.G states that "'Low-level waste' or 'waste' means radioactive waste, other than: (1) waste generated as a result of defense activities of the federal government or federal research and development activities..."

In the Low-Level Radioactive Waste Policy Act, the only kinds of low-level radioactive wastes excluded from consideration in low-level radioactive waste disposal are those wastes that originate as a result of defense activities of the U.S. Department of Energy or federal research and development activities. The Act does not extend this exclusion to waste generated resulting from defense activities from the U.S. Department of Defense (DOD). Therefore, the policy as described in Article 1 of the Compact may be too broad.

2. Article 2. Definitions

We have read with much interest your discussion on why the Rocky Mountain Compact definition of low-level radioactive waste should be retained. Nevertheless, we believe that the prospects for uniform consent by Congress of all low-level radioactive waste interstate compacts would be enhanced to the degree that the definitions in the compacts conform to the definition of the Low-Level Radioactive Waste Policy Act.

For the two other items (1) and (3) listed in your letter of March 19 regarding definitions, we thank you for your comments and have no outstanding concerns with them.

3. Article 3. Rights, Responsibilities and Obligations

For items 1, 2, 3, and 5 in your letter of March 19, 1982, we acknowledge your comments and have no further outstanding concerns with them.

We acknowledge your interest in developing a 274i agreement with the NRC as indicated in your comments in item 4. We are willing to work with individual States to achieve such agreements. Some recent examples of such agreements are those for the States of Washington and South Carolina. The subagreement between the State of Washington and the NRC is related to the use of third party data in transportation enforcement cases and was signed in January 1982. (See enclosure.) The memorandum of agreement between NRC and the South Carolina Department of Health and Environmental Control relates to the use of third party data and the regulation of NRC licensee-shippers of radioactive waste to the Barnwell facility. This agreement is still being negotiated.

We are not certain that the provision in Article 3.F is capable of implementation. A State should not be required to make a commitment to enforce federal law or regulations dealing with packaging and transportation of radioactive materials regulated under the Atomic Energy Act unless it is an Agreement State or willing to become one. If the Congress wishes to extend State jurisdiction to provide for State enforcement of U. S. Department of Transportation (DOT) regulations without the use of State/DOT enforcement contracts, which is an administrative action, then the Congress would presumably need to authorize or establish a DOT/State program similar to the NRC's Agreement State program in section 274b of the Atomic Energy Act of 1954, as amended. This potential for inconsistency with federal law would be eliminated by inserting an introductory limitation at the beginning of the section, so that it reads, "To the extent authorized by federal law, each party state..."

4. Article 4. Board Approval of Regional Facilities

We acknowledge your comments on this item. Please see our comments above regarding the scope of the compact.

5. Article 5. Surcharges

We acknowledge your comments on this item and we note that volume is to be measured in cubic feet, except as otherwise determined by the Board, as indicated in item 1 under Article 3 of your letter.

6. Article 6. The Board

We acknowledge your comments on this item. We have no further concerns on this matter.

7. Section 2

Where necessary some parts of Section 2 would have to conform to changes made in the various articles cited above. Otherwise, we have no further concerns in Section 2.

There is another matter we want to discuss. In the process of reviewing a number of low-level radioactive waste compacts and available data, it has become increasingly apparent that some may have problems with economic stability. Due to the relatively small low-level waste generation rate in the Rocky Mountain compact as currently constituted, the disposal costs might be quite high compared to neighboring compacts and States causing the Rocky Mountain Compact to be unstable. This instability would take the form of some party States withdrawing and joining nearby compacts, or joining up with individual States, where disposal costs are forecast to be considerably less. A shrinking number of party States with a correspondingly smaller volume of waste available for disposal would force disposal costs still higher for the remaining party States. These higher costs could possibly create an incentive among generators for compromises in public health and safety.

The relatively high disposal cost for the Rocky Mountain Compact is suggested by examining the enclosed curve that illustrates the strong economy of scale in disposal cost versus generation rate. We believe that all compacts and States that have generation rates that fall on the steep portion of the curve should closely examine the ramifications that could result from such high disposal costs.

We continue to believe that the Rocky Mountain States are making important progress toward achieving a workable compact. We are looking forward to discussing with you further any of the points we have made here and wish you a successful conclusion in this compact effort.

Sincerely,

G. Wayne Kerr

G. Wayne Kerr, Director
Office of State Programs

Enclosure:
Subagreement between NRC and Washington
Disposal Cost vs. Annual Generation Rate

cc: Charles Tedford
Ace Martelle
George Goldstein
Al Rickers
Walt Ackerman
Doug Larson

DSHS Contract No. 4007-HCA-33253-

DEC 17 1981

Subagreement Between the State of Washington and the NRC Related to Use of Third Party Data in Transportation Enforcement Cases

Background

The State of Washington has had State inspectors at the low level radioactive waste burial site near Richland, Washington on a full time basis, whenever the site is operating. The U.S. Nuclear Regulatory Commission (NRC) has had NRC inspectors at the site an average of about four days per month. This has resulted in uneven enforcement actions against NRC licensees because, in the past, NRC actions have been limited to observations by the NRC inspectors. The NRC has determined that information gathered by State of Washington inspectors can be used by the NRC in enforcement actions against NRC licensees. This will result in more effective and more uniform enforcement action overall. This also should improve the radiation safety during transportation of radioactive waste and during its receipt and handling at the burial site.

It is recognized that utilization of the concept discussed above will require agreement and cooperation from both parties. It is expected that utilization of this concept will not require excessive effort or extensive program changes by either the State or NRC, and in the overall effect will be advantageous to both parties.

On September 6, 1978, the NRC and the State of Washington signed a Memorandum of Agreement which expressed the desire of both parties to cooperate in the regulation of nuclear activities. That broad Memorandum of Agreement anticipated subagreements related to more specific areas of cooperation. This Subagreement to the Memorandum of Agreement is intended to define the broad policy matters involved in cooperation on transportation enforcement matters. It is expected that both parties will develop operating procedures to implement these policies.

Agreements and Understandings

In order to define and clarify the roles of the State of Washington and the NRC, those two parties agree as follows:

1. This Subagreement does not alter the authority of the State to issue and to terminate user permits, to regulate operations at the site that are normally under the jurisdiction of the State, and to take any other actions normally under State jurisdiction.

2. This Subagreement does not alter the authority of the NRC to take enforcement actions against its licensees for violations of NRC regulations and requirements.

3. Efforts will be made by both parties to avoid duplicative and excessive action against a shipper for the same violation. This is not meant to preclude appropriate dual actions such as termination of a user permit by the State and NRC enforcement action for the same violation.

4. Best efforts will be made by both parties to keep the other informed in a timely manner of any significant enforcement actions, status of pending cases, changes in regulations, interpretation, new developments, proposed Information Notices, Circulars, Bulletins or other announcements and information in the transportation area.

5. When a violation of NRC or DOT requirements is observed by a State inspector in a shipment which originated at an NRC licensee, the following steps will be taken.

   a. The State of Washington will notify NRC Region V by telephone. During this telephone discussion, a decision will be made whether the situation is serious enough for an NRC inspector to respond to the site.

   b. If an NRC inspector is to respond, such response will be within 24 hours of the notification if at all possible. No action is required of the State of Washington except to make arrangements to have the package or shipment held until the arrival of the NRC inspector.

   c. If the decision is that an NRC inspector will not respond, a decision will be made during the telephone conversation whether the NRC wants to consider action on the matter. Many situations may be of minor significance and questionable importance, and neither party will wish to take any formal action.

   d. If the NRC wishes to consider enforcement action on the matter, the State of Washington will supply information in writing to the NRC. The amount of information will be kept to the minimum necessary for effective enforcement action. Information will be in a mutually agreeable format and will be completed in a timely manner.

   e. It is recognized that should an NRC licensee formally protest enforcement action based on information supplied by a State inspector, that State inspector could be needed to provide testimony at an NRC hearing. The NRC will fund any travel costs associated with such testimony, and will supply any necessary legal support for the State inspector.

6. The principal contact for these matters within the Region V NRC office is the Chief, Materials Radiation Protection Section, Robert D. Thomas, telephone 415-943-3700. The principal contact for these matters in the State of Washington will be Nancy P. Kirner, telephone 206-753-3459.

7. This Subagreement shall take effect immedately upon signing by the State and the Nuclear Regulatory Commission, and may be terminated upon 30 days written notice by either party.

FOR THE STATE OF WASHINGTON

John A. Beare
John A. Beare, M.D., M.P.H.
Director, Health Services Division
Department of Social and Health Services

Dated this 5th day of January, 1982

at Olympia, Washington.

FOR THE UNITED STATES NUCLEAR REGULATORY COMMISSION

R H Engelken
R. H. Engelken
Regional Administrator
Region V

Dated this 14th day of December, 1981

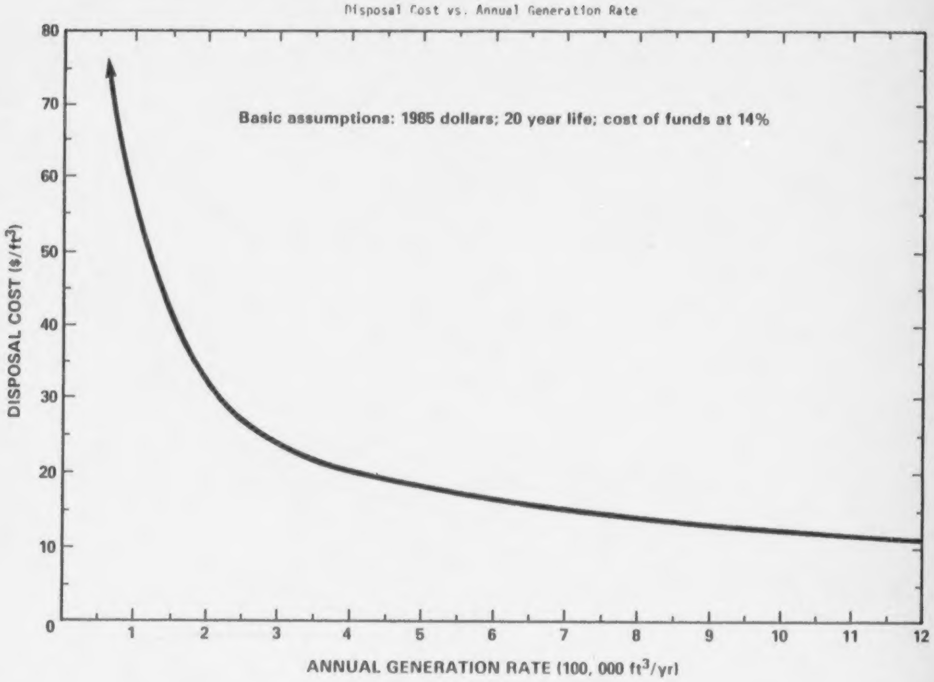
at Walnut Creek, California.

FOR THE STATE OF WASHINGTON

Robert Copeland
Contracting Officer

Dated this ________ day of ____________, 1981

at ____________, __________________.


Disposal Cost vs. Annual Generation Rate
Basic assumptions: 1985 dollars; 20 year life; cost of funds at 14%
DISPOSAL COST ($/ft³)
0
10
20
30
40
50
60
70
80
ANNUAL GENERATION RATE (100, 000 ft³/yr)
1
2
3
4
5
6
7
8
9
10
11
12

STATE OF COLORADO

EXECUTIVE CHAMBERS
136 State Capitol
Denver, Colorado 80203
Phone (303) 866-2471

Richard D. Lamm
Governor

74/55

March 19, 1982

G. Wayne Kerr, Director
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Kerr:

Thank you for your letter of January 5, 1982, in which you provided the Nuclear Regulatory Commission's (NRC) comments on the Rocky Mountain Low-Level Radioactive Waste Compact. We greatly appreciate your quick response and your interest in sharing your ideas with us on the Compact. Following is the response of the Rocky Mountain States to your comments.

Article 2 - Definitions

1. The definition of disposal has been amended to read as follows: "disposal means the isolation of waste from the biosphere, with no intention of retrieval, such as by land burial." We believe that this reduces the intent problem which you raised, while retaining the flexibility to accommodate non-burial technologies should they be developed in the future.

2. The majority of the Rocky Mountain States concur that our definition of low-level radioactive waste should be retained, with some clarifying modifications. The majority of the states do not feel it is in the states' interest to adopt the federal definition per se. The definition agreed to by the majority of the Rocky Mountain States for inclusion in the Compact reads as follows:

"'Low-level waste' or 'waste' means radioactive waste, other than: (1) waste generated as a result of defense activities of the federal government or federal research and development activities; (2) high-level waste such as irradiated reactor fuel, liquid waste from reprocessing irradiated reactor fuel or solids into which any such liquid waste has been converted; (3) waste material containing transuranic elements with contamination levels greater than ten nanocuries per gram of waste material; (4) byproduct material as defined in Section 11 e. (2) of the 'Atomic Energy Act of 1954,' as amended on November 8, 1978; (5) wastes from mining, milling, smelting or similar processing of ores and mineral-bearing material primarily for minerals other than radium;".

We believe that this definition is consistent with and does reasonably conform with both the intent and the specific definition contained in the

Low-Level Radioactive Waste Policy Act (PL 96-573). This definition has been retained in the Compact after careful consideration by the Rocky Mountain States. We believe that this definition is necessary for the compacting states to retain control over the types of waste which may be disposed of at a regional facility. The provision of Article 7, Section D, which establishes conditions for acceptance of waste other than that defined in the Compact as low-level waste, will allow the states to respond to exceptions to the definition while preserving the basic stability underlying the Compact. There are also constitutional and legal construction reasons for not adopting PL 96-573 verbatim. We believe that the inclusion of the terms "high-level waste," "spent nuclear fuel" and "transuranic waste" in the definition without defining those terms would have resulted in an unacceptably vague definition.

3. Article 2.H contains a definition of management which intentionally includes incineration.

Article 3 - Rights, Responsibilities, and Obligations

1. The Rocky Mountain States are hopeful that through the good faith efforts of the other states to develop a new regional facility, Nevada will be persuaded to allow the continued operation of the Beatty facility until the new facility is operational.

2. Article 3.C has been amended to specify that the 20 percent or more will be measured "in cubic feet, except as otherwise determined by the Board." This provision will allow flexibility to respond to changing waste generation profiles or other special factors.

3. The term "perpetual care" has been replaced with "long-term care" throughout the Compact.

4. Article 3.F(1) is intended only to encompass the 274i agreement. No other inspection or enforcement of NRC licensees is contemplated. We would, however, be interested in developing an agreement with the NRC to provide mandatory enforcement (with discretion) by NRC if non-compliance is discovered through a 274i agreement.

5. This error has been corrected.

Article 4 - Board Approval of Regional Facilities

1. The Board's approval of regional facilities is based solely on the two economic factors specified in Article 4.B. The Board will in no way duplicate or review the health and safety determinations made by an agreement state or the NRC in licensing a facility. Because of this limited review by the Board, we believe that a 90-day period is reasonable.

Article 5 - Surcharges

1. The unit of waste upon which the surcharges are to be levied is not specified; however, it is expected that it will be based upon volume unless otherwise specified.

Article 6 - The Board

The term "private" low-level waste facilities has been eliminated. Article 6.0.5 is intended to compile an inventory of all low-level waste facilities in the region, for planning purposes.

Enclosed is an updated copy of the Rocky Mountain Compact which contains a number of very minor changes in addition to those outlined above.

In conclusion, I would like to stress that this Compact has been very carefully negotiated by the Rocky Mountain States to provide the States with the security necessary for compacting while, at the same time, allowing flexibility to adjust to a field which is expected to change dramatically over the 20 to 50 years that the Compact will be important.

As the Compact is proceeding through the Colorado Legislature at this time, we would again appreciate a prompt response. If the NRC continues to have any significant concerns with the Rocky Mountain Compact, we would appreciate a meeting to discuss these concerns as soon as possible.

Again, we appreciate NRC's very constructive comments and we look forward to continuing working with you in meeting this important challenge.

Sincerely,

Leonard Slosky
Leonard Slosky, Chairman
Rocky Mountain States
Compact Negotiation Group

cc: Charles Tedford
Ace Martelle
George Goldstein
Al Rickers
Walt Ackerman
Doug Larson

Second Regular Session

LDO NO. 82 0360/1 Fifty-third General Assembly HOUSE BILL NO. 124

STATE OF COLORADO

Health, Enviro
Welfare & Institut

BY REPRESENTATIVE Spano;
also SENATOR Barnhill.

A BILL FOR AN ACT

CONCERNING LOW-LEVEL RADIOACTIVE WASTE, AND MAKING APPROPRIATIONS IN RELATION THERETO.

Bill Summary

(Note: This summary applies to this bill as introduced and does not necessarily reflect any amendments which may be subsequently adopted.)

Provides for the adoption of the Rocky Mountain low-level radioactive waste compact and implementing legislation.

Provides that boards of county commissioners would designate sites for facilities to manage low-level radioactive waste until July 1, 1983. In the event that no such designation is made or proposed, the department of health is authorized to prepare an alternative plan for a facility, which plan must be submitted to the general assembly for review and approval.

Provides penalties for violations relating to the disposal and management of low-level radioactive waste.

Makes appropriations for implementation of the act.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. Article 60 of title 24, Colorado Revised Statutes 1973, as amended, is amended BY THE ADDITION OF A NEW PART, to read:

PART 22

ROCKY MOUNTAIN LOW-LEVEL RADIOACTIVE WASTE COMPACT

Capital letters indicate new material to be added to existing statute.
Dashes through the words indicate deletions from existing statute.

24-60-2201. *Short title*. This part 22 shall be known and may be cited as the "Rocky Mountain Low-level Radioactive Waste Compact".

24-60-2202. *Execution of compact*. The general assembly hereby approves and ratifies and the governor shall enter into a compact on behalf of the state of Colorado with any of the United States or other jurisdictions legally joining therein in the form substantially as follows:

ARTICLE 1

FINDINGS AND PURPOSE

A. The party states agree that each state is responsible for providing for the management of low-level radioactive waste generated within its borders, except for waste generated as a result of defense activities of the federal government or federal research and development activities. The party states also recognize that low-level radioactive waste can be most safely and efficiently managed on a regional basis. Moreover, the party states find that the United States Congress, by enacting the "Low-level Radioactive Waste Policy Act" (P.L. 96-573), has encouraged the use of interstate compacts to provide for the establishment and operation of facilities for regional management of low-level radioactive waste.

B. It is the purpose of the party states, by entering into an interstate compact, to establish the means for cooperative effort in managing low-level radioactive waste; to ensure the availability and economic viability of sufficient facilities for the proper and efficient management of low-level radioactive waste generated within the region while preventing unnecessary and uneconomic proliferation of such facilities; to encourage reduction of the volume of low-level radioactive waste requiring disposal within the region; to restrict management within the region of low-level radioactive waste generated outside the region; to distribute the costs, benefits and obligations of low-level radioactive waste management equitably among the party states; and by these means to promote the health, safety and welfare of the residents within the region.

ARTICLE 2

DEFINITIONS

As used in this compact, unless the context clearly indicates otherwise:

A. "Board" means the Rocky Mountain low-level radioactive waste board;

B. "Carrier" means a person who transports low-level waste;

C. "Disposal" means the isolation of waste from the biosphere, with no intention of retrieval, such as by land burial;

D. "Facility" means any property, equipment or structure used or to be used for the management of low-level waste;

E. "Generate" means to produce low-level waste;

F. "Host state" means a party state in which a regional facility is located or being developed;

G. "Low-level waste" or "waste" means radioactive waste, other than: (1) waste generated as a result of defense activities of the federal government or federal research and development activities; (2) high-level waste such as irradiated reactor fuel, liquid waste from reprocessing irradiated reactor fuel, or solids into which any such liquid waste has been converted; (3) waste material containing transuranic elements with contamination levels greater than ten nanocuries per gram of waste material; (4) byproduct material as defined in Section 11 e. (2) of the "Atomic Energy Act of 1954", as amended on November 8, 1978; (5) wastes from mining, milling, smelting or similar processing of ores and mineral-bearing material primarily for minerals other than radium;

H. "Management" means collection, consolidation, storage, treatment, incineration or disposal;

I. "Operator" means a person who operates a regional facility;

J. "Person" means an individual, corporation, partnership or other legal entity, whether public or private;

K. "Region" means the combined geographical area within the boundaries of the party states; and

L. "Regional facility" means a facility within any party state which either:

(1) Has been approved as a regional facility by the board; or

(2) Is the low-level waste facility in existence on January 1, 1982, at Beatty, Nevada.

ARTICLE 3

RIGHTS, RESPONSIBILITIES AND OBLIGATIONS

A. There shall be regional facilities sufficient to manage the low-level waste generated within the region. At least one regional facility shall be open and operating in a party state other than Nevada within six years after this compact becomes law in Nevada and in one other state.

B. Low-level waste generated within the region shall be managed at regional facilities without discrimination among the party states; provided, however, that a host state may close a regional facility when necessary for public health or safety.

C. Each party state which, according to reasonable projections made by the board, is expected to generate twenty percent or more in cubic feet except as otherwise determined by the boar of the low-level waste generated within the region has an obligation to become a host state in compliance with subsection D of this article.

D. A host state, or a party state seeking to fulfill its obligation to become a host state, shall:

(1) Cause a regional facility to be developed on a timely basis as determined by the board, and secure the approval of such regional facility by the board as provided in Article 4 before allowing site preparation or physical construction to begin;

(2) Ensure by its own law, consistent with any applicable federal law, the protection and preservation of

public health and safety in the siting, design, development, licensure or other regulation, operation, closure, decommissioning and long-term care of the regional facilities within the state;

(3) Subject to the approval of the board, ensure that charges for management of low-level waste at the regional facilities within the state are reasonable;

(4) Solicit comments from each other party state and the board regarding siting, design, development, licensure or other regulation, operation, closure, decommissioning and long-term care of the regional facilities within the state and respond in writing to such comments;

(5) Submit an annual report to the board which contains projections of the anticipated future capacity and availability of the regional facilities within the state, together with other information required by the board; and

(6) Notify the board immediately if any exigency arises requiring the possible temporary or permanent closure of a regional facility within the state at a time earlier than was projected in the state's most recent annual report to the board.

E. Once a party state has served as a host state, it shall not be obligated to serve again until each other party state having an obligation under subsection C of this article has fulfilled that obligation. Nevada, already being a host state, shall not be obligated to serve again as a host state until every other ~~eligible~~ party state has so served.

F. Each party state:

(1) Agrees to adopt and enforce procedures requiring low-level waste shipments originating within its borders and destined for a regional facility to conform to ~~applicable~~ packaging and transportation requirements and regulations. Such procedures shall include but are not limited to:

(a) Periodic inspections of packaging and shipping practices;

(b) Periodic inspections of waste containers while in the custody of carriers; and

(c) Appropriate enforcement actions with respect to violations;

(2) Agrees that after receiving notification from a host state that a person in the party state has violated ~~applicable~~ packaging, shipping or transportation requirements or regulations, it shall take appropriate action to ensure that violations do not recur. Appropriate action may include but is not limited to the requirement that a bond be posted by the violator to pay the cost of repackaging at the regional facility and the requirement that future shipments be inspected;

(3) May impose fees to recover the cost of the practices provided for in paragraphs (1) and (2) of this subsection;

(4) Shall maintain an inventory of all generators within the state that may have low-level waste to be managed at a

regional facility; and

(5) May impose requirements or regulations more stringent than those required by this subsection.

ARTICLE 4

BOARD APPROVAL OF REGIONAL FACILITIES

A. Within ninety days after being requested to do so by a party state, the board shall approve or disapprove a regional facility to be located within that state.

B. A regional facility shall be approved by the board if and only if the board determines that:

(1) There will be, for the foreseeable future, sufficient demand to render operation of the proposed facility economically feasible without endangering the economic feasibility of operation of any other regional facility; and

(2) The facility will have sufficient capacity to serve the needs of the region for a reasonable period of years.

ARTICLE 5

SURCHARGES

A. The board shall impose a "compact surcharge" per unit of waste received at any regional facility. The surcharge shall be adequate to pay the costs and expenses of the board in the conduct of its authorized activities and may be increased or decreased as the board deems necessary.

B. A host state may impose a "state surcharge" per unit of waste received at any regional facility within the state. The host state may fix and change the amount of the state surcharge subject to approval by the board. Money received from the state surcharge may be used by the host state for any purpose authorized by its own law, including but not limited to costs of licensure and regulatory activities related to the regional facility, reserves for decommissioning and long-term care of the regional facility and local impact assistance.

ARTICLE 6

THE BOARD

A. The "Rocky Mountain low-level radioactive waste board" which shall not be an agency or instrumentality of any par state, is created.

B. The board shall consist of one member from each party state. Each party state shall determine how and for what term its member shall be appointed, and how and for what term any alternate may be appointed to perform that member's duties on the board in the member's absence.

C. Each party state is entitled to one vote. A majority of the board constitutes a quorum. Unless otherwise provided in this compact, a majority of the total number of votes on the board is necessary for the board to take any action.

D. The board shall meet at least once a year and otherwise as its business requires. Meetings of the board may be held in any place within the region deemed by the board to be reasonably convenient for the attendance of persons required or entitled to attend and where adequate accommodations may be found. Reasonable public notice and opportunity for comment shall be given with respect to any meeting; provided, however, that nothing in this subsection shall preclude the board from meeting in executive session when seeking legal advice from its attorneys or when discussing the employment, discipline, or termination of any of its employees.

E. The board shall pay necessary travel and reasonable per diem expenses of its members, alternates and advisory committee members.

F. The board shall organize itself for the efficient conduct of its business. It shall adopt and publish rules consistent with this compact regarding its organization and procedures. In special circumstances the board, with unanimous consent of its members, may take actions by telephone; provided, however, that any action taken by telephone shall be confirmed in writing by each member within thirty days. Any action taken by telephone shall be noted in the minutes of the board.

G. The board may use for its purposes the services of any personnel or other resources which may be offered by any party state.

H. The board may establish its offices in space provided for that purpose by any of the party states or, if space is not provided or is deemed inadequate, in any space within the region selected by the board.

I. Consistant with available funds, the board may contract for necessary personnel services and may employ such staff as it deems necessary to carry out its duties. Staff shall be employed without regard for the personnel, civil service or merit system laws of any of the party states and shall serve at the pleasure of the board. The board may provide appropriate employee benefit programs for its staff.

J. The board shall establish a fiscal year which conforms to the extent practicable to the fiscal years of the party states.

K. The board shall keep an accurate account of all receipts and disbursements. An annual audit of the books of the board shall be conducted by an independent certified public accountant, and the audit report shall be made a part of the annual report of the board.

L. The board shall prepare and include in the annual report a budget showing anticipated receipts and disbursements for the ensuing year.

M. Upon legislative enactment of this compact, each party state shall appropriate seventy thousand dollars ($70,000) to the board to support its activities prior to the collection of sufficient funds through the compact surcharge imposed pursuant to subsection A of article 5 of this compact.

N. The board may accept any donations, grants, equipment, supplies, materials or services, conditional or otherwise, from any source. The nature, amount and condition, if any, attendant upon any donation, grant or other resources accepted pursuant to this subsection, together with the identity of the donor or grantor, shall be detailed in the annual report of the board.

O. In addition to the powers and duties conferred upon the board pursuant to other provisions of this compact, the board:

(1) Shall submit communications to the governors and to the presiding officers of the legislatures of the party states regarding the activities of the board, including an annual report to be submitted by December 15;

(2) May assemble and make available to the governments of the party states and to the public through its members information concerning low-level waste management needs, technologies and problems;

(3) Shall keep a current inventory of all generators within the region, based upon information provided by the party states;

(4) Shall keep a current inventory of all regional facilities, including information on the size, capacity, location, specific wastes capable of being managed and the projected useful life of each regional facility;

(5) May keep a current inventory of all low-level waste facilities in the region, based upon information provided by the party states;

(6) Shall ascertain on a continuing basis the needs for regional facilities and capacity to manage each of the various classes of low-level waste.

(7) May develop a regional low-level waste management plan;

(8) May establish such advisory committees as it deems necessary for the purpose of advising the board on matters pertaining to the management of low-level waste;

(9) May contract as it deems appropriate to accomplish its duties and effectuate its powers subject to its projected available resource; but no contract made by the board shall bind any party state;

(10) Shall make suggestions to appropriate officials of the party states to ensure that adequate emergency response programs are available for dealing with any exigency that might arise with respect to low-level waste transportation or management;

(11) Shall prepare contingency plans, with the cooperation and approval of the host state, for management of low-level waste in the event any regional facility should be closed;

(12) May examine all records of operators ~~or~~ of regional facilities pertaining to operating costs, profits or the assessment or collection of any charge, fee or surcharge;

(13) Shall have the power to sue; and

(14) When authorized by unanimous vote of its members, may invervene as of right in any administrative or judicial proceeding involving low-level waste.

ARTICLE 7

PROHIBITED ACTS AND PENALTIES

A. It shall be unlawful for any person to dispose of low-level waste within the region, except at a regional facility; provided, however, that a generator who, prior to January 1, 1982, had been disposing of only his own waste on his own property may, subject to applicable federal and state law, continue to do so.

B. After January 1, 1986, it shall be unlawful for any person to export low-level waste which was generated within the region outside the region unless authorized to do so by the board. In determining whether to grant such authorization, the factors to be considered by the board shall include, but not be limited to, the following:

(1) The economic impact of the export of the waste on the regional facilities;

(2) The economic impact on the generator of refusing to permit the export of the waste; and

(3) The availability of a regional facility appropriate for the disposal of the waste involved.

C. After January 1, 1986, it shall be unlawful for any person to manage any low-level waste within the region unless the waste was generated within the region or unless authorized to do so both by the board and by the state in which said management takes place. In determining whether to grant such authorization, the factors to be considered by the board shall include, but not be limited to, the following:

(1) The impact of importing waste on the available

capacity and projected life of the regional facilities;

(2) The economic impact on the regional facilities; and

(3) The availability of a regional facility appropriate for the disposal of the type of waste involved.

D. It shall be unlawful for any person to manage at a regional facility any radioactive waste other than low-level waste as defined in this compact, unless authorized to do so both by the board and the host state. In determining whether to grant such authorization, the factors to be considered by the board shall include, but not be limited to, the following:

(1) The impact of allowing such management on the available capacity and projected life of the regional facilities;

(2) The availability of a facility appropriate for the disposal of the type of waste involved;

(3) The existance of transuranic elements in the waste; and

(4) The economic impact on the regional facilities.

E. Any person who ~~xxiolazex~~ violates subsection A or B of this article shall be liable to the board for a civil penalty not to exceed ten times the charges which would have been charged for disposal of the waste at a regional facility.

F. Any person who violates subsection C or D of this article shall be liable to the board for a civil penalty not to exceed ten times the charges which were charged for management of the waste at a regional facility.

G. The civil penalties provided for in subsections E and F of this article may be enforced and collected in any court of general jurisdiction within the region where necessary ~~xxxxxxx~~ jurisdiction is obtained by an appropriate proceeding commenced on behalf of the board by the attorney general of the party state wherein the proceeding is brought or by other counsel authorized by the board. In any such proceeding, the board, if it prevails, is entitled to recover reasonable attorney's fees as part of its costs.

H. Out of any civil penalty collected for a violation of subsection A or B of this article, the board shall pay to the appropriate operator a sum sufficient in the judgement of the board to compensate the operator for any loss of revenue attributable to the violation. Such compensation may be subject to state and compact surcharges as if received in the normal course of the operator's business. The remainder of the civil penalty collected shall be ~~xxxxxxxxx~~ allocated by the board. In making such allocation, the board shall give first priority to the needs of the long-term care funds in the region.

I. Any civil penalty collected for a violation of subsection C or D of this article shall be ~~xxxxxxxxx~~ allocated by the board. In making such allocation, the board shall give first priority to the needs of the long-term care funds in the region.

J. Violations of subsection A, B, C, or D of this article may be enjoined by any court of general jurisdiction within the region where necessary ~~xxxxxxx~~ jurisdiction is obtained in any appropriate proceeding commenced on behalf of the board by the attorney general of the party state wherein the proceeding is brought or by other counsel authorized by the board. In any such proceeding, the board, if it prevails, is entitled to recover reasonable attorney's fees as part of its costs. K. No state attorney general shall be required to bring any proceeding under any subsection of this article, except upon his consent.

ARTICLE 8

ELIGIBILITY, ENTRY INTO EFFECT, CONGRESSIONAL CONSENT, WITHDRAWAL, EXCLUSION

A. Arizona, Colorado, Nevada, New Mexico, Utah and Wyoming are eligible to become parties to this compact. Any other state may be made eligible by unanimous consent of the board.

B. An eligible state may become a party state by legislative enactment of this compact or by executive order of its governor adopting this compact; provided, however, a state becoming a party by executive order shall cease to be a party state upon adjournment of the first general session of its legislature convened thereafter, unless before such adjournment the legislature shall have enacted this compact.

C. This compact shall take effect when it has been enacted by the legislatures of two eligible states. However, subsections B and C of article 7 shall not take effect until Congress has by law consented to this compact. Every five years after such consent has been given, Congress may by law withdraw its consent.

D. A state which has become a party state by legislative enactment may withdraw by legislation repealing its enactment of this compact; but no such repeal shall take effect until two years after enactment of the repealing legislation. If the withdrawing state is a host state, any regional facility in that state shall remain available to receive low-level waste generated within the region until five years after the effective date of the withdrawal; provided, however, this provision shall not apply to the existing facility in Beatty, Nevada.

E. A party state may be excluded from this compact by a two-thirds' vote of the members representing the other party states, acting in a meeting, on the ground that the state to be excluded has failed to carry out its obligations under this compact. Such an exclusion may be terminated upon a two-thirds' vote of the members acting in a meeting.

ARTICLE 9

CONSTRUCTION AND SEVERABILITY

A. The provisions of this compact shall be broadly construed to carry out the purposes of the compact.

B. Nothing in this compact shall be construed to affect any judicial proceeding pending on the effective date of this compact.

C. If any part or application of this compact is held invalid, the remainder, or its application to other situations or persons, shall not be affected.

SECTION 2. Title 25, Colorado Revised Statutes 1973, as amended, is amended BY THE ADDITION OF A NEW ARTICLE, to read:

ARTICLE 17

Low-level Radioactive Waste

25-17-101. Short title. This article shall be known and may be cited as the "Low-level Radioactive Waste Act".

25-17-102. Legislative declaration. The general assembly hereby finds and declares that the provisions of this article are necessary for the state to fulfill its responsibilities under the "Rocky Mountain Low-level Radioactive Waste Compact" set forth in part 22 of article 60 of title 24, C. R. S. 1973.

25-17-103. Definitions. As used in this article, unless the context otherwise requires:

(1) "Department" means the department of health.

(2) "Facility" means a low-level radioactive waste facility ~~which facility is~~ capable of serving as a regional disposal or management site for low-level radioactive waste and which complies with the provisions of the "Rocky Mountain Low-level Radioactive Waste Compact" set forth in part 22 of article 60 of title 24, C.R.S. 1973.

(3) "Low-level radioactive waste" means radioactive waste, other than: (1) waste ~~that~~ generated as a result of defense activities of the federal government or federal research and development activities; (2) ~~which is neither~~ high-level waste such as irradiated reactor fuel, liquid waste from reprocessing irradiated reactor fuel ~~nor~~ or solids into which any such liquid waste has been converted; (3) waste material containing transuranic elements with contamination levels greater than

ten nanocuries per gram of waste material; (4) byproduct material as defined in Section 11 e. (2) of the "Atomic Energy Act of 1954", as amended on November 8, 1978; (5) wastes from mining, milling, smelting, similar processing of ore and mineral-bearing material primarily for mineral other than radium;

25-17-104. Administration - application of other laws. (1) Except as otherwise provided in this article, the department shall be the agency responsible for administration of this article on behalf of the state.

(2) Except as otherwise provided in this article, all facilities shall be subject to the provisions on radiation control set forth in part 1 of article 11 of this title and the provisions on solid wastes disposal sites and facilities set forth in part 1 of article 20 of title 30, C.R.S. 1973. The disposal of low-level radioactive waste made pursuant to this article is not subject to the provisions of part 2 of article 11 of this title.

25-17-105. Site ~~designation~~ recommendation by counties. (1) Prior to any action by the department for the assessment and evaluation of potential areas for a facility, under section 25-17-106, the department shall first cooperate with and provide counties in this state the opportunity to ~~designate~~ recommend facility sites within their boundaries. In making such ~~designation~~ recommendation, the board of county commissioners shall ~~meet~~ consider the factors set forth in section 25-17-106 (1) (b) and shall provide reasonable opportunity for public comment.

(2) In making such ~~designation~~ recommendation the board of county commissioners shall also consider comments from the

department, the Rocky Mountain low-level radioactive waste board, and the advisory committee established in section 25-17-109; except that the board of county commissioners shall make the final determination as to ~~approval and~~ the designation of a facility site pursuant to part 1 of article 20 of title 30, C.R.S. 1973.

(3) Any person who proposes to operate a facility ~~prior to July 1, 1983,~~ shall first apply for a ~~permit therefor~~ certificate of designation to the board of county commissioners of the county in which the proposed facility site is located. Such site and facility shall be reviewed and approved by such board of county commissioners prior to the issuance of any license pursuant to part 1 of article 11 of this title.

(4) If no board of county commissioners in this state ~~designates~~ recommends a facility site ~~or a site is not proposed~~ by July 1, 1983, the department may proceed to prepare its state-wide assessment and evaluation and its alternative plan pursuant to section 25-17-106.

25-17-106. State-wide assessment of facility sites. (1) For the protection of the public health and safety and without limiting or qualifying other applicable laws, rules, regulations, standards, or limitations pertaining to the control of radiation in this state, the department shall be granted the following additional authority concerning low-level radioactive waste:

(a) The department may acquire by gift, transfer, or purchase any and all lands, buildings, and grounds reasonably necessary for a regional low-level radioactive waste facility.

The department may also make such acquisition by the exercise of the right of eminent domain pursuant to articles 1 to 7 of title 38, C.R.S. 1973, only if such right is authorized by the general assembly as provided in paragraph (e) of this subsection (1).

(b) To insure that a suitable regional low-level radioactive waste facility is established, the department shall conduct a statewide assessment and evaluation of potential areas for the location of a facility. The assessment and evaluation shall consider all applicable federal and state laws and regulations and shall consider but need not be limited to the following factors:

(I) Physical and chemical characteristics of strata;

(II) Surface and subsurface hydrology;

(III) Topography and drainage;

(IV) Meteorology and climatology;

(V) Demography (including population density near the site);

(VI) Access routes and affected public roads;

(VII) Ecological impact;

(VIII) Relationship to local land use plans;

(IX) Ownership of real property.

(c) The department shall provide reasonable opportunity for public comment during the assessment and evaluation and shall afford interested persons an opportunity, at public hearing, to submit data and views orally or in writing on the potentially suitable areas. Subsequent to having conducted the assessment and evaluation, the department shall identify those areas determined as potentially suitable for a facility.

(d) The department shall not approve any facility for the disposal of low-level radioactive waste outside of the areas identified pursuant to this subsection (1) or an area recommended ~~designated~~ by a board of county commissioners under section 25-17-105 unless the site applicant demonstrates to the satisfaction of the department that the proposed site is at least as technically suitable as the areas identified pursuant to this subsection (1).

(e) The department may, by lease or license, provide for the operation of facilities for the implementation of the purposes of this article and part 22 of article 60 of title 24, C.R.S. 1973. No facility may be licensed until designated pursuant to part 1 of article 20 of title 30, C.R.S. 1973 ~~approved~~ by the board of county commissioners of the county in which the proposed facility is to be located. In the event that no county has recommended ~~designated~~ a facility site ~~and~~ or an application for such site ~~is~~ has not been submitted by January 1, 1985 ~~[illegible]~~, the department shall prepare an alternative plan for facility development. Said alternative plan shall be submitted to the general assembly no later than January 1, 1986 ~~[illegible]~~, for review and approval. In the submission of an alternative plan to the general assembly, the department shall also request authority to use the right of eminent domain to acquire a site for a facility.

(f) The department shall require the posting of a bond or other surety by each licensee to assure the availability of funds to the state in the event of accident, abandonment, discontinuance of an operation, insolvency, or other inability of a lessee or licensee to meet the requirements of the department pursuant to article 11 of this title, in providing for the safe operation, decommissioning, decontamination, and reclamation of a facility, or any circumstance which results in a potential radiation hazard.

25-17-107. State surcharge. (1) In addition to the fees authorized by section 25-11-103, the following surcharges shall be imposed on each licensed facility:

(a) The licensee shall be required to pay an annual fee to the county or municipality in which the facility is located, unless waived by the county or municipality. The amount of the fee shall be established by mutual agreement of the county or municipality and the licensee and may include, but not be limited to, the actual direct costs of increased burden on county or municipal services created by the facility, including the improvement and maintenance of roads and bridges, fire protection, law enforcement, monitoring by county or municipal health officials, and emergency preparation and response. The amount of the annual fee shall not exceed two percent of the annual gross revenue received by the facility and shall be reduced by the amount paid by the facility as a payment in lieu of taxes to county government pursuant to section 25-11-103 (7) (c). No licensee shall commence operations at a facility until the agreement for the annual fee is executed by the county or municipality and the licensee or such fee is waived by the county or municipality. In the event that the licensee fails to comply with the terms of the executed agreement, the board of county commissioners or the governing body of the municipality may petition the department to suspend the facility's license in the manner provided in article 4 of title 24, C.R.S. 1973, until the agreement has been fully complied with.

(b) Each licensee shall pay an additional surcharge of one percent of gross revenue received by the facility. The surcharge shall be paid quarterly, as accrued, to the department, which shall credit all such receipts in the general fund of the state.

25-17-108. Governor to appoint member to compact board. The governor shall appoint, with the consent of the senate, the Colorado member of the Rocky Mountain low-level radioactive waste board, and such member shall serve at the pleasure of the governor. Such member may, with the approval of the governor, designate an alternate to represent this state when such member is unable to serve. The member or alternate, if any, shall receive no compensation for his services but shall be reimbursed for actual and necessary expenses incurred in the performance of his duties.

25-17-109. Colorado low-level radioactive waste advisory committee. (1) There is hereby established the Colorado low-level radioactive waste advisory committee, which shall consist of thirteen members. One member shall be the Colorado member of the Rocky Mountain low-level radioactive waste board, who shall serve as the chairman. One member shall be the executive director of the department of health or his designee. One member shall be the director of the Colorado geological survey or his designee. The other ten members of the committee shall be appointed as follows:

(a) Three members shall be appointed by the president of the senate. Such members shall serve at the pleasure of the president of the senate.

(b) Three members shall be appointed by the speaker of the house of representatives. Such members shall serve at the pleasure of the speaker of the house of representatives.

(c) Four members shall be appointed by the governor. Such members shall serve at the pleasure of the governor.

(2) Any vacancies in the committee shall be filled in the same manner as the original appointments. The committee shall meet on the call of its chairman but in any event shall meet not less than once a year.

(3) The committee shall advise the department, the board of county commissioners of each county designating or proposing a facility site or having a facility, and the Colorado member of the Rocky Mountain low-level radioactive waste board on any matter relating to the implementation of this article and any low-level radioactive waste matter of

state concern.

25-17-110. Coordination with other programs and agencies. The department shall coordinate the low-level radioactive waste program with all other programs within the department and with other local, state, or federal agencies as appropriate. For the purpose of administration and enforcement of matters pertaining to transportation and packaging as provided in this article, the department shall coordinate its activities with those of the public utilities commission.

25-17-111. Regulation of fees. (1) All rates, charges, and classifications made, demanded, or received in the operation of a licensed facility located in the state of Colorado shall be just and reasonable. Every unjust or unreasonable charge made, demanded, or received with respect to such operation is prohibited.

(2) The power and authority is hereby vested in the state board of health and it is hereby made the duty of the board in promoting public health and safety to adopt necessary rules and regulations to govern and regulate the rates, charges, and classifications of every facility in this state and to prevent unjust, unreasonable, and discriminatory rates, charges, and classifications of every such facility.

(3) (a) Under such rules and regulations as the state board of health may prescribe, any person operating a facility in this state shall file with the state board of health, at

least sixty days prior to the proposed effective date and in such form, and with such filing fee as the state board of health may designate, proposed schedules showing all rates, charges, and classifications collected or enforced or to be collected or enforced. Such rates, when effective, shall be posted and open to public inspection at the facility.

(b) The board shall make available for public inspection the filing and supporting information and provide reasonable public notice thereof.

(4) (a) Unless the board otherwise orders, no change shall be made in any rate, charge, or classification collected or enforced or to be collected or enforced by a facility except after sixty days of filing with the board. All filings shall be kept open for public inspection with new schedules stating plainly the changes to be made in the schedules then in force and the time when the changes will go into effect.

(b) The board shall not approve or disapprove a filing without a public hearing. If the board does not disapprove or schedule a hearing on a filing within sixty days of receipt by the board, the filing shall automatically become effective.

(c) During the sixty-day review period, the board may conclude that it is in the public interest to hold a public hearing, or an interested person may request a public hearing by so petitioning the board. Such hearings shall be held in the manner provided in article 4 of title 24, C.R.S. 1973.

(5) (a) Whenever the board after a hearing upon its own

motion or upon petition finds, based upon the record and investigation by the board, that the rates, charges, or classifications collected or enforced or to be collected or enforced by any facility are unjust, unreasonable, discriminatory, or violative of any provision of law or that such rates, charges, or classifications are insufficient, the board shall determine the just, reasonable, or sufficient rates, charges, classifications, rules, regulations, or practices to be thereafter observed and in force and shall fix the same by order of the board.

(b) The board has the power, after a hearing upon its own motion or upon complaint, to investigate a single rate, charge, classification, or practice or the entire schedule of rates, charges, classifications, or practices of any facility and to establish new rates, charges, classifications, or practices in lieu thereof.

~~[illegible]. Civil penalties. (a) It is a violation of this article for any person to dispose of low-level radioactive waste within this state except at a licensed facility, except that a generator of such waste who, prior to January 1, 1990, has been disposing of [illegible] [illegible] continue to do so.~~

~~(b) After January 1, 1990, it shall be a violation of this article for any person to export out of this state low-level radioactive waste that is generated within this~~

~~[illegible]~~

~~(a) [illegible]~~

~~(b) [illegible]~~

~~(c) [illegible]~~

~~(3) [illegible]~~

~~(a) [illegible]~~

~~(b) [illegible]~~

~~(c) [illegible]~~

~~(4) [illegible]~~

~~authorization, the factors to be considered shall include, but not be limited to, the following:~~

~~(a) The impact of allowing such management on the available capacity and projected life of regional facilities;~~

~~(b) The availability of a facility appropriate for the disposal of the type of waste involved;~~

~~(c) The existence of transuranic elements in the waste; and~~

~~(d) The economic impact on regional facilities.~~

~~(5) Any person who violates subsection (2) or (3) of this section shall be liable to the department for a civil penalty not to exceed ten times the charges which would have been charged for disposal of the waste at a facility.~~

~~(6) Any person who violates subsection (3) or (4) of this section shall be liable to the department for a civil penalty not to exceed ten times the charges which were charged for management of the waste at a facility.~~

~~(7) The civil penalties provided for in subsections (6) and (7) of this section may be enforced and collected in any court of general jurisdiction where necessary personal jurisdiction is obtained by an appropriate proceeding commenced on behalf of the state by the attorney general. In any such proceeding, the department, if it prevails, is entitled to recover reasonable attorney fees as part of its costs.~~

~~(8) Out of any civil penalty collected for a violation~~

~~of subsection (1) or (2) of this section, the [illegible] pay to the facility licensee a sum sufficient in the judgment of the department to compensate the licensee for any loss of revenue attributable to the violation. Such compensation shall be subject to state surcharges as if received in the normal course of the facility's business. The remainder of the civil penalty collected shall be deposited by the department in the facility long-term care fund.~~

~~(2) Any civil penalty collected for a violation of subsection (3) or (4) of this section shall be deposited by the department in a facility long-term care fund.~~

SECTION 3. Appropriation. (1) There is hereby appropriated, out of any moneys in the state treasury not otherwise appropriated, for the fiscal year commencing July 1, 1982, to the department of health, the sum of ____________ dollars ($), or so much thereof as may be necessary for the implementation of this act. The department of health shall contract for services from the Colorado geological survey to assist in the implementation of this act.

(2) There is hereby appropriated, out of any moneys in the state treasury not otherwise appropriated, for the fiscal year commencing July 1, 1982, to the department of health for allocation to the Rocky Mountain low-level radioactive waste board, the sum of seventy thousand dollars ($70,000), or so much thereof as may be necessary for discharge of the Rocky Mountain low-level radioactive waste board's responsibilities

under this act. Such moneys shall remain available until expended or until June 30, 1984, whichever is sooner.

SECTION 4. Effective date. This act shall take effect July 1, 1982.

SECTION 5. Safety clause. The general assembly hereby finds, determines, and declares that this act is necessary for the immediate preservation of the public peace, health, and safety.

QUESTION 15. You note in your testimony that the Office of General Counsel is now preparing an analysis of the Commission's existing authority and the need for additional statutory authority to deal with cases such as the recent "Ray Miller" case. Please provide a copy of that legal analysis for the record.

ANSWER:

The Office of General Counsel is still preparing its analysis. When completed the Commission will review the analysis and provide you with a copy.

QUESTION 16. Please provide a brief summary of the work undertaken by the Office for Analysis and Evaluation of Operational Data since its inception, including the information generated by AEOD and the actions taken by the Commission, if any, as a result of data provided by AEOD.

ANSWER.

SUMMARY OF AEOD ACTIVITIES

NRC's Office for Analysis and Evaluation of Operational Data (AEOD) was established several months after the accident at TMI-2 to identify and feed back significant safety lessons of operational experience to the NRC, its licensees, the nuclear industry as a whole, and the public. The principal responsibility is to assess operational experience in order to identify precursor events or other serious events which potentially could impact on public health and safety, and events which may not be individually significant but in combination may represent an unrecognized safety problem or concern. The results of AEOD studies are published as engineering evaluations and case studies. In addition, AEOD manages the NRC licensee event report (LER) system and publishes the NRC's Licensee Event Report (LER) Compilation, which contains abstracts of LERs processed during a one-month period; Power Reactor Events report, a bimonthly publication which contains abstracts of events of significance and interest to plant operators; and the quarterly Report to Congress on Abnormal Occurrences.

The principal responsibilities of AEOD regarding technical studies and related activities concerning such items as management of data files and publication of feedback reports are discussed individually in the following sections.

TECHNICAL STUDIES

Engineering Evaluations and Case Studies

AEOD has as a primary responsibility the task of reviewing operational experience reported by NRC nuclear power plant licensees. To fulfill this task, AEOD selects events of apparent interest to safety for further review as either an engineering evaluation or a case study. To date 20 case studies have been issued and more than 110 engineering evaluations have been completed. At the present time, there are a total of nine case studies and 31 engineering evaluations in progress. In addition, other evaluations, referred to as technical reviews, are completed which involve prompt assessments of a specific question or questions concerning an event.

An engineering evaluation is a rather short but intensive study of a given event to assess significance and potential implications. The results are documented in formal reports, although the effort involved usually is a few staffdays to several staffweeks of investigative time. Case studies are in-depth investigations of apparently significant events or situations. They involve several staffmonths of engineering effort, and result in a formal report identifying the specific safety problems (actual or potential) illustrated by the event and recommending actions to improve safety and prevent recurrence of the event. Before issuance, this report is sent for peer review and comment to at least the applicable utility and appropriate NRC offices.

QUESTION 16

Engineering evaluations and case studies focus upon single events and multiple events that demonstrate potential generic problems, as well as individually significant events. Lesser events which appear as a group to exhibit a prevailing tendency of significance will be assessed by statistical trend and pattern techniques that are currently being developed.

Actions Taken in Response to AEOD Reports

AEOD reports are handled in a significantly different manner than similar reports and recommendations issued by NRC program offices (e.g., the Office of Nuclear Reactor Regulation (NRR) and the Office of Inspection and Enforcement (IE)). Normally, reports or recommendations from these latter organizations are issued directly to licensees for consideration or action. In the case of AEOD, however, its final reports are issued for review and appropriate action by other NRC offices but are not issued to licensees for action. Thus, licensees do not need to act on AEOD report recommendations. Licensee action is requested only after an in-depth review of the AEOD report by the NRC office(s) responsible for defining and implementing subsequent licensing actions (i.e., NRR or the Office of Nuclear Material Safety and Safeguards (NMSS)) or for inspection and enforcement actions (i.e., IE).

AEOD considers this technical review of its reports to be appropriate and useful in attempting to properly balance two objectives: (a) to assure technical validation of the information that underlies the reports' recommendations; and (b) to maintain an independent AEOD viewpoint (i.e., to avoid any perception that AEOD conclusions and recommendations are negotiated with or otherwise unduely influenced by other organizations).

The actions taken in response to AEOD recommendations vary considerably depending on the significance and generic applicability of the recommendations. The response has included modifications of the scope of ongoing generic issues (e.g., Unresolved Safety Issues); issuance of additional guidance to licensees (e.g., IE Information Notices), and issuance of specific directives requiring action by licensees (e.g., IE Bulletins, NRR Generic Letters, changes to plant Technical Specifications). Some examples of specific actions taken as a result of AEOD reports include:

1. As a result of a review of the partial scram failure at Browns Ferry, AEOD identified generic deficiencies involving the BWR scram capability protection arrangements, scram system leakage isolation arrangements, operator preparation for full and partial scram system failures and potential ATWS-inducing systems interaction between the safety-related system and nonsafety-related control air system. Based upon the AEOD and other related studies, NRR issued a set of new requirements relating to BWR scram system design and operation. Licensee actions with regard to these specific requirements for improvements are currently under review by the staff.

QUESTION 16

2. As a result of a review of an event that occurred at St. Lucie, AEOD identified potential deficiencies in the test circuits and procedures for the reactor protection system. An IE Circular was issued requiring that licensees review and revise test circuits and procedures accordingly.

3. The review of an LER from Point Beach lead AEOD to identify a deficiency in the design of the electrical system (lack of interlocks to prevent the inadvertent closure of a single tie breaker to preserve the independence of Class 1E buses). The concern was generic to a number of other operating plants. NRR has implemented Technical Specification changes for corresponding plant modifications.

4. In response to an increasing number of LERs reporting inoperable safety-related instruments due to freezing and other severe temperature effects, AEOD recommendations to NRR and IE resulted in a revision to the Standard Review Plan and the development of inspection modules to ensure that adequate protection measures are available and operable.

5. Following up on an LER, AEOD identified that some operating plants did not have either Technical Specifications or administrative controls governing the operating of class 1E vital instrument buses. The concern was that these uninterruptible power sources could be out of service indefinitely and result in a situation where they could not meet the Single Failure Criterion. At the request of AEOD, NRR implemented appropriate Technical Specification changes addressing these systems.

6. AEOD analysis of an event at North Anna lead to the conclusion that some operating plants do not restrict the starting of large motors or other large loads while the diesel generator is operating in the test mode. The generic concern arising from such a circumstance was that the diesel generator may become overloaded and result in a load rejection transient. Operational procedures were revised and a design review of the electrical distribution system was initiated at some operating plants.

7. An AEOD engineering evaluation identified steam generator overfill transients as a potentially significant event. The generic concern was that overfilling a steam generator could affect the safety of a plant by causing steamline breaks and simultaneous primary and secondary systems blowdown. Regulatory requirements such as a safety-grade, high-steam-generator-level trip are being considered to resolve this issue and prevent overfill transients.

8. As the result of a case study associated with reactor vessel level instrumentation for boiling water reactors, AEOD identified a concern related to an open equalizing valve in the level instrumentation which could cause erroneous level indications and incorrect protection and control functions. An IE Information Notice was issued to licensees to alleviate this repetitious problem of open equalizing valves and ensure the safety functions of the level instrumentation.

QUESTION 16

9. As a result of AEOD's investigation into degradation of service water system functions due to obstructions caused by Asiatic clams, an IE bulletin was issued. The safety concern was that the clams and other debris could cause a common-mode failure affecting the heat removal capability of the service water system for other safety-related equipment. Licensees have implemented procedures to ensure systems are operable to prevent buildup of marine organisms.

10. AEOD case study work associated with the Crystal River loss of Non-Nuclear Instrumentation (NII) power resulted in re-analysis of the behavior of atmospheric dump valves at B&W plants. To avoid overcooling transients in B&W plants, design changes were implemented preventing the uncontrolled opening of the atmospheric dump valves upon loss of NII/ICS power.

11. AEOD's participation in the peer review of the IREP analysis for Crystal River resulted in the identification of significant transient/accident initiators which had not been considered. AEOD's work highlighted the fact that steam generator leaks, overcooling transients, loss of NNI/power and other events, which were not significant contributors to risk in the WASH-1400 plants (Surry and Peach Bottom), could be significant risk contributors for B&W plants.

12. As the result of AEOD's evaluation of an event involving special nuclear material, an IE Information Notice was issued to inform licensees of the possibility of jammed source racks in gamma irradiators and consequent fires. The need for procedures and systems to address these problems were communicated to the licensees by NMSS.

COLLECTION, STORAGE, AND RETRIEVAL OF OPERATIONAL EXPERIENCE

Licensee Event Report (LER) Rulemaking

As a result of studies performed after the TMI-2 accident, it became apparent that the NRC's reporting requirements for operational events needed to be improved and strengthened through the development of a proposed regulation. AEOD has developed this proposed rule and has provided the necessary coordination within the NRC, the industry and the public. The proposed rule has been published in the Federal Register for comment. After consideration of the numerous public comments and other factors involved, AEOD has amended the proposed rule by clarifying the scope and content of the requirements, particularly the criteria that define which operational events must be reported. A draft final rule is currently under review by the NRC staff and is expected to be forwarded in the near future to the Commission for review and approval.

NPRDS Quality Assurance Audits

AEOD periodically audits the completeness and quality of the data associated with the industry-managed voluntary Nuclear Plant Reliability Data Reporting System (NPRDS). This program provided a baseline of information concerning the completeness and quality of the NPRDS failure reporting and engineering data files. Subsequent analyses of the completeness and quality of these files are being conducted periodically by AEOD and compared to the baseline data in order to provide a quantitative measure of the improvements in NPRDS. The Commission has indicated that should the necessary level of improvement in NPRDS not be obtained, and as a result, the NRC does not have access to the type and quality of the data needed for regulation activities, consideration will be given to requiring licensee participation in this system.

Sequence Coding and Search System (SCSS)

The major shortcoming of existing LER files is the inability to retrieve desired information with a high degree of precision or completeness; that is, the data files do not help the user to identify all events, and do not allow the ready retrieval of only those events that involve a specific situation or have a specific characteristic. Additionally, the actual LER for each event of interest must be read to obtain any supplemental information since it is not included in the computerized data file. This time consuming effort is usually not done when retrieving stored data; instead, only the abstracts of events are read. However, abstracts are usually not adequate to fully understand an event, determine its significance and relevance, and identify potential needed action. In sum, although there is a wealth of interesting and important information contained in past operating experience, it is extremely difficult to use this information efficiently.

To address the shortcomings noted above, AEOD is developing a new computer-based system, called the Sequence Coding and Search System (SCSS), which is based on two fundamental concepts: (1) encode all of the relevant technical information provided by the licensee in the event report and (2) encode the information with sufficient "tags" so that the individual pieces can be precisely retrieved.

The SCSS is currently undergoing final testing and trial use and is expected to be fully operational in the near future.

Exchanging Information with Industry

Within the last three years, two industry organizations, the Institute of Nuclear Power Operations (INPO) in Atlanta, Georgia, and the Nuclear Safety Analysis Center (NSAC) (a part of the Electric Power Research Institute in Palo Alto, California), have been formed to study operational experience, among other subjects. In early April 1982, AEOD prepared and executed an NRC Memorandum of Agreement with INPO for the exchange and feedback of operational experience and safety information on nuclear power plants. A similar agreement was signed with NSAC in late April.

The Institute of Electrical and Electronics Engineers also continues to work closely with the AEOD to develop the Energy Industry Identification System (EIIS). This system will standardize the nomenclature for systems, structures, and components through the nuclear industry and will provide a common language for reporting information about specific components or generic classes of components in LERs.

QUESTION 16

PERIODIC AEOD REPORTS

Abnormal Occurrence Reports

An Abnormal Occurrence is defined in Section 208 of the Energy Reorganization Act of 1974 as an unscheduled incident or event which the NRC determines is significant from the standpoint of public health or safety. Under the provisions of Section 208, AEOD reports Abnormal Occurrences by publishing notices in the *Federal Register* and issues quarterly reports of these occurrences to Congress. Also included in the quarterly reports are updates of previously reported Abnormal Occurrences and summaries of certain events that may be perceived by the public as significant but do not meet the Section 208 Abnormal Occurrence criteria.

Power Reactor Events

This bimonthly newsletter prepared by AEOD compiles operating experience information about commercial nuclear power plants. This includes summaries of noteworthy events and listings and abstracts of NRC documents that discuss safety-related or possible generic issues. It is intended to feed back the lessons learned from operational experience directly to plant personnel, (i.e., managers, licensed reactor operators, training coordinators, and support personnel).

Licensee Event Report (LER) Compilation

This monthly report contains LER operational information that was processed into the LER data file of the Nuclear Operations Analysis Center (NOAC) during the preceding month. The LER summaries in this report are arranged alphabetically by facility name and then chronologically by event date for each facility. Component, system, and keyword indexes follow the summaries.

QUESTION 17. Has the Commission or any member of the Commission staff undertaken a technical review of the document "The Next Nuclear Gamble, Transportation and Storage of Nuclear Waste," by Marvin Resnikoff? If so, please provide a detailed summary of the Commission's conclusions, together with copies of any communications with the author of this report.

ANSWER.

The staff has performed a preliminary review of the main transportation issues raised by the Council on Economic Priorities (CEP). Dr. Marvin Resnikoff, author of the CEP newsletter and book on the subject, recites claims similar to those he brought to our attention in a CEP newsletter a year ago (e.g., inadequate standards, fabrication defects, insufficient testing of packages, untrained emergency personnel, and unacceptable accident consequences). The staff preliminary review indicates no new substantial safety information that would necessitate the withdrawal of spent fuel casks now in service. Enclosed is the staff preliminary evaluation of the CEP recommendations to federal agencies and several of the technical issues raised.

A member of the staff did review and provide personal comments to Marvin Resnikoff on the draft of *The Next Nuclear Gamble*. A copy of the letter on the draft report dated October 21, 1982 to Marvin Resnikoff is enclosed.

Summary

1.	Need to physically test a prototype of each design.	Engineering analysis adequate to demonstrate compliance.
2.	Current standards need upgrading	NRC studies,experience shows adequate safety
3.	Consequences of accident, i.e., accident could threaten major city as seriously as a meltdown	The extent of potential consequences and risk from a shipping cask accident are considerably less than from a core melt accident. CEP health effects assumptions and property damage estimates are overly conservative.
4.	Problems with casks now used and removal of those casks from service.	Excellent safety record. CEP provides no new safety information. Regulatory action taken on case-by-case basis.
5.	Calculational models are flawed and seriously criticized by government contractors.	Based on single equation for puncture. Equation based on tests. No instance known where equation failed to predict a conservative result.
6.	Inadequacy of "fire test"	NRC test adequately represents the effect of actual hydrocarbon fires.
7.	30-foot drop test is inadequate	Requirement includes impact on "unyielding" target. Forces are larger than 60-mph onto concrete.
8.	Casks tested by DOE were more crashworthy than current casks; welds failed in the tests; cask leaked.	NRC requirements not based on these tests. Tests were conducted only to confirm scale model and analysis techniques. Tests showed good correlation.
9.	NRC inspections - Has NRC inspected manufacturers and transport?	All QA records for casks in service have been inspected by IE. Each fabricator of spent fuel casks have been inspected by IE. NRC does not inspect during transport. NRC inspections have been at shipment and receiving points.

10.	Why no EIS for a rural area?	The NRC EIS (NUREG-0170) on transportation covers rural areas.
11.	What is IE position on rating of utilities?	NRR states info is generally correct. However, NRC corrective action taken in each area and improvement noted. The CEP report does not reflect an NRC rating for any of the plants discussed in the report.
12.	Position on "pressure vessel" argument	Based on tests of bare fuel in steam environment conducted by ORNL - radioactive material dispersed to the environment would be limited.
13.	Position on "copper plates" argument.	Copper plates were not authorized. Cask removed from service by order.
14.	Rail and barge alternatives	NRC does not favor one mode over another. ICC concluded no compelling reason for special trains.
15.	Local emergency personnel	DOE has assistance team. DOT has training program.
16.	Faulty welds	Constructed under approved QA plans. NRC has no reason to believe welds are faulty.
17.	Low NRC consequence estimates.	CEP estimates are not realistic.
18.	Store fuel on site.	This is largely in accordance with Waste Policy Act.

General Statement

The general conclusion that CEP draws from its study is that spent nuclear fuel should be stored for longer periods at nuclear reactor sites, perhaps in the new generation of dry storage casks that are currently being developed. This recommendation is largely consistent with the provisions of the Nuclear Waste Policy Act recently enacted by Congress.

The basis of the CEP conclusion, however, is founded on its perception of transportation risk drawn from its study. The CEP study which examines package design, testing and transport, contains specific comments and recommendations which are inconsistent with safety studies performed by the NRC and other federal agencies. The information and data in these studies indicate that current test standards for casks offer a high level of safety, particularly when applied to road transport. The NRC carefully reviews the safety of cask designs before authorizing their use. The manufacture and use of casks are covered by NRC quality assurance plans. The safety record developed over more than 30 years and thousands of spent fuel shipments has been excellent.

Neither the CEP press release nor its March newsletter on the same subject provide any new information that would necessitate the withdrawal of spent fuel casks now in service.

1. No physical tests have ever been performed on a full-scale model of today's generation of shipping casks. The NRC should physically test one cask of each design.

The report is accurate in that full-scale physical tests have not been conducted on casks that are presently being used. However, the NRC does require applicants to demonstrate that proposed cask designs meet NRC safety standards. This demonstration may be by means of full-scale testing, scale model testing, engineering analysis, or a combination of these methods.

The use of engineering analysis techniques, including computer modeling, is a well established and verified engineering practice. A number of computer programs are available and have been used by engineers to accurately model a variety of different systems and to successfully predict their performance under specified conditions. Simplifying assumptions of a conservative or bounding nature are routinely used to reduce the amount of analysis required to obtain necessary results.

Although casks in current use have not been subject to full-scale physical tests, a number of obsolete casks have been tested by DOE. In one test, a truck carrying a cask was deliberately placed in the path of a speeding locomotive. The 120-ton locomotive struck the cask at a speed of 80 miles per hour. In another test, a cask aboard a truck moving at about 80 miles per hour was deliberately crashed into a massive concrete structure. Subsequent examination in both tests indicated that no significant quantity of radioactive material would have been released had the casks been loaded with spent fuel. In addition, the observed test results were in good agreement with the engineering evaluations made before the tests were conducted.

2. Cask standards need to be upgraded to assure casks can withstand realistic accidents.

The NRC has conducted several environmental studies which demonstrate that current package standards provide an adequate degree of safety. The NRC test standards are not intended to bound every conceivable transportation accident. The test standards used for licensing are intended to provide a design basis such that casks will survive most accidents with little or no release of radioactive material to the environment. NRC studies show that the test standards provide an adequate degree of safety. Only under highly unlikely conditions would a cask fail to isolate its contents from the environment and the estimated health consequences of these failures are small.

3. Consequences of an accident could threaten a major city as seriously as a meltdown.

Allegations

The press release on the report issued by CEP states, "The study reveals that an accident in a crowded city such as New York, Boston, Chicago, Pittsburgh and St. Louis, would cause damages in the tens of billions of dollars. The number of people killed from immediate radiation poisoning and latent cancers could total in the hundreds of thousands."

The March 1983 CEP NEWSLETTER states, "NRC calculations, based on a relatively small release of radioactivity, show that an accident in a major metropolitan area could cause up to $4 billion in damage and thousands of delayed cancer fatalities. After a thorough examination of NRC calculations, augmented by additional analysis, the CEP study concludes that the damage estimates of the NRC are unrealistically low and could run to the tens of billions of dollars."

The Summary of Findings of the report (page 17) states, "Because each [cask] holds a tremendous inventory of radioactivity, the casks now in use threaten accidents which, while unlikely, would be as serious as a meltdown at a nuclear reactor. Many more people and much more property could be affected by a cask accident than by a reactor meltdown, because a cask accident could occur in the midst of a populous city."

Staff Response

Although a catastrophic spent fuel transportation accident could present a

Consequences cont'd

threat to public health and safety, the extent of potential consequences and risk from a shipping cask accident are considerably less than from a core-melt accident.

Spent Fuel Transport Accident

The potential consequences of a spent fuel transport accident in a large city have been estimated in various NRC studies. The "Final Environmental Statement on the Transport of Radioactive Material by Air and Other Modes," (NUREG-0170), estimated such an accident would result in no prompt radiation fatality and less than one latent cancer fatality and losses of $200 million. The probability of occurrence was estimated at 2×10^{-8} per year. Another study, "Transportation of Radionuclides in Urban Environs: Draft Environmental Statement" (NUREG/CR-743), estimated no prompt fatality and approximately one latent cancer fatality and losses of $2 billion. The probably of occurrence was estimated at 1.4×10^{-10} per year.

Reactor Melt-Down Estimate

The "Reactor Safety Study" (WASH-1400) estimated a core melt-down accident could result in 3300 prompt fatalities and 1500 latent cancer fatalities per year for a period of 30 years. Property losses were estimated to be as much as $14 billion. The probability of occurrence was estimated at 1×10^{-9} per year.

Comparison of Risk Estimates for Cask Accidents and Reactor Accidents

A comparison of the risks from a worst case power reactor accident and a worst case shipping cask accident shows clearly that a shipping cask accident is a much smaller public hazard than a power reactor accident.

Consequences cont'd

Inaccurate CEP Statement Regarding NRC Consequence Estimates

CEP's statement that NRC calculations show that a cask accident could cause up to $4 billion in damage and thousands of delayed cancer deaths is not accurate. These estimates were, instead, estimates from a Sandia report of possible consequences of an act of sabotage on a cask. Further study, including physical tests, conducted by Battelle Columbus Laboratories indicated that the amount of radioactive material released in respirable form from an act of sabotage would be a factor of 35 lower than that initially estimated by Sandia. Thus, the consequence numbers in the referenced Sandia report were substantially overestimated.

Apparent Reasons for Higher CEP Consequence Estimates

- CEP estimates of health effects appear to be based on an assumption that members of the public are permitted to remain present in potentially contaminated areas; the estimates of monetary costs appear to be based on an assumption that members of the public must evacuate these areas and cannot reenter them until decontaminated.

- Regarding the health effects assumption
  CEP uses a range of 77 to 7000 latent cancer fatalities per million person rems recommended by Dr. K. Z. Morgan instead of the range of 77 to 226 listed by the National Academy of Sciences, Biological Effects of Ionizing Radiation (BEIR III). Thus, the CEP estimates of cancer fatalities are much higher than would be calculated from the risk factors believed applicable by most noted U. S. experts.

Consequences cont'd

0 Regarding the property damage estimates

CEP appears to use the EPA "screening level" contamination level of 0.2 microcuries per square meter for transuranic elements (such as plutonium) to define areas that must be cleaned up. This is a very conservative standard because of the radiotoxicity of transuranics. Also, these areas could be decontaminated without "removing the surface pavement, soil and buildings" as stated on page 172 of the CEP report.

4. The present generation of shipping casks should be immediately withdrawn.

We do not agree that CEP has a persuasive argument for withdrawing casks from service. A number of studies conducted by NRC and other federal agencies indicate that current test standards provide adequate protection to the public. The NRC carefully reviews the safety of cask designs before authorizing their use. The manufacture and use of casks are covered by NRC approved quality assurance plans. The safety record developed over more than 30 years and thousands of spent fuel shipments has been excellent.

The attached table shows the status of all LWR spent fuel casks currently authorized by the NRC.

The NRC has removed casks from service when problems have been identified and such action is deemed warranted. Once the problem has been corrected, the cask may be returned to service. No cask which may present a health and safety problem to the public is currently authorized for use.

U.S. Nuclear Regulatory Commission
Transportation Certification Branch

Status: Spent Fuel Casks (as of March 10, 1983)

Model No.	No. Built	Serial No.	Owner	Comments
NFS-4 (truck cask, 1-PWR or 2-BWR)	7	NFS-4A	NFS	Out of Service by NRC Order dated April 6, 1979.
		NFS-4B	NFS	" " " " " " " " " "
		NAC-1A	Duke Pwr	" " " " " " " " " "
		NAC-1B	Duke Pwr	Out of Service since October 1980 - cavity measurement out.
		NAC-1C	NAC	Out of Service by NRC Order dated April 6, 1979.
		NAC-1D	NAC	In Limited Service (dry shipments, 2.5 kw) by NRC Order dated December 2, 1981. Contamination problems with cask surface.
		NAC-1E	NAC	Out of Service by owner because of internal and external contamination problems.
IF-300 (rail cask, 7-PWR or 18-BWR)	4	301	GE	In Service - limited to PWR dry shipments - pressure relief valve designs defective (6/81) and BWR fuel basket analysis in error (9/82)
		302	GE	" " " " " " "
		303	CP&L Co.	" " " " " " "
		304	GE	" " " " " " "
NL-1/2 (truck cask, 1-PWR or 2-BWR)	5 (1 under construction, no work being done)		NAC	In Service
NL-10/24 (rail cask, 10-PWR or 24-BWR)	2 (1 under construction, no work being done)		NAC	Out of Service - no fuel baskets available or QA checks performed by NAC or IE.
TN-8 (truck cask, 3-PWR)	4	TN-8.1	available in Europe	
		TN-8.2	" " "	
		TN-8.3	Transnuc.	In Service
		TN-8.4	"	" "
TN-9 (truck cask, 7-BWR)	2	TN-9.1	Comm. Ed.	In Service
		TN-9.2	Transnuc.	In Service

5. Elaborate computer programs, used instead of full scale testing, have been found inadequate by government contractors.

This comment does not concern an "elaborate computer program;" rather it applies to a single equation used for evaluating puncture resistance of shipping casks. The equation was developed by ORNL and was based upon a series of physical tests.

An LLL report sponsored by NRC does question the adequacy of the equation, largely because the equation was empirically derived. However, the test results in the LLL report, as well as the results of several physical tests of cask models and full scale casks indicate the equation is adequate for its intended purpose. We know of no instance where the equation has failed to predict a conservative result.

6. The average temperature of a highway or rail fire is 1805°F, but casks are built to survive a fire of only 1475°F for one half-hour. Some highway fires have burned hotter and longer.

NRC regulations specify a thermal test with a thermal radiation environment of 1475°F rather than a fire test with a flame temperature of 1475°F. The overall effectiveness of the NRC thermal test is approximately the same as a real world fire having a flame temperature on the order of 2200°F. The technical literature shows that spent fuel casks respond to the NRC test about the same as they would to an actual hydrocarbon fire.

With respect to fire duration, the probability of exceeding the half-hour test in an accident has been studied and found to be small. The CEP's own report indicates that fires occur in only 1.6 percent of truck accidents.

7. Casks are built to withstand a 30 mile per hour crash with an immovable barrier. Yet highway accidents often take place at over 60 mph.

It is not valid to compare a 30 mph impact of a spent fuel cask into an unyielding surface with the crash of a vehicle carrying that cask at the same speed. Casks are evaluated for impact onto an essentially unyielding surface. Thus, for purposes of engineering analysis, all the energy of impact is assumed to be absorbed by the cask. This is a convenient and conservative method of analysis. In an actual accident, there are very few (if any) objects or surfaces that would not yield considerably if struck by a spent fuel cask. Preliminary information from a study currently being conducted for the NRC indicates that the mechanical forces produced by the NRC's 30-foot drop test (30 mph) are larger than for a 60 mph impact of a spent fuel cask onto a 20-inch thick concrete surface representative of a highway. In addition, crushing of the truck cab, and energy absorbed in the trailer, in breaking tie-down devices, in rotary motion, and in demolishing objects in the path of the cask would all serve to reduce the amount of energy available to damage the cask.

8. The full scale tests conducted by DOE used casks that were more crashworthy than current models; welds failed in the tests; the casks leaked.

DOE conducted these tests to evaluate the reliability of available engineering analysis and scale modeling methods for assessing transportation accidents. The results of the full scale tests were in good agreement with the results predicted before the tests by analysis and scale model testing.

The NRC's conclusion that its safety standards are adequate is not based upon these tests. The adequacy of the NRC standards is supported by various safety studies and environmental statements prepared by NRC and other agencies as well as the excellent safety record that has been exhibited in transporting spent fuel.

9. NRC inspections of spent fuel casks.

All manufactures of spent fuel casks have been inspected. The majority of spent fuel casks have been inspected by NRC during some phase of their construction. The QA records of all spent fuel casks in current use have been reviewed by NRC QA experts.

The NRC inspects, on a random basis, actual shipments prior to shipment and upon receipt. The DOT has responsibility to inspect shipments on the road.

The NRC has required its licensees to apply QA programs to the design, fabrication, use, and maintenance of spent fuel casks. The QA programs must be approved by the NRC. Several deficiencies in package construction have been found and corrected. The effectiveness of this program is evidenced by the identification and correction of several deficiencies which have occurred during package construction.

10. Why no Environmental Impact Statement (EIS) for a rural area?

Given several references by CEP to NUREG-0170, "Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes," December 1977 (e.g., page 247), the basis of this question is in error or the question's intent is obscure. The risks documented in NUREG-0170 include the probabilities and consequences of transport accidents in rural areas. Both direct health impacts and decontamination costs for rural areas were evaluated in this EIS.

11. CEP examined utility violations of NRC regulations for handling nuclear waste fuel. While the overall record was good, compliance records were unacceptably poor for four utilities (Oyster Creek, San Onofre, Pilgrim 1, and Trojan). Twenty-four utilities received excellent ratings.

The information in the CEP report for each of the four cases appears to be generally correct. In each of the four instances cited by CEP, NRC corrective action was taken to prevent future recurrence and improvement in the particular area was noted. It should be clearly understood that the CEP report does not reflect the NRC rating for these four, or any of the other plants discussed in the report. CEP has not provided a basis for relating the importance of the deficiency to its rating.

12. "Pressure Cooker" Argument. A cask involved in a severe crash and fire would act like a pressure cooker. The excessive heat would generate steam and high pressure. Eventually the steam would be released from the pressure relief valve carrying with it radioactive particulates and volatiles. This release of radioactivity would create a 37-mile-long plume contaminating a corresponding area beyond allowable EPA limits.

Cask blowdown could potentially result in radioactive particulate and gases being vented to the environment. However, the CEP model assumes source terms many times larger than have been observed in relevant experiments. For example, the CEP estimates that 10 percent of the cesium in the case would be released. Cesium is the principal contributor to health effects. Experiments conducted at ORNL indicate that only 0.3 percent (33 times less than CEP) of the cesium would be released to the interior of the cask. The amount of material that would then be released to the outside of the cask (considering suspension, plate-out, etc.) is likely to be on the order of 1000 times less. Staff believes CEP has overestimated the cesium source term by as much as a factor of about 33,000.

It is not clear how CEP arrived at an estimate of a 37-mile-long plume size or what EPA limit is being referenced.

13. "Copper Plate Issue."

The use of the copper plate was an unauthorized attempt by the owner to compensate for a shielding deficiency due to bowing in the cask. The cask was removed from service in 1979 by NRC order. The cask will not be returned to service until all outstanding safety issues have been resolved.

The NRC has reviewed the fabrication records of other casks of this design. Those which deviate from the design drawings have been removed from service. Those which do meet the design drawings may only be used under restricted conditions, pending resolution of outstanding safety issues.

14. Rail and barge systems should be considered as an alternative to trucking used fuel. In agreement with the railroads, CEP recommends the use of special-use trains which are safer, though more expensive, than mixed trains.

Both the industry and NRC have studied barge and rail shipments. Federal regulations neither restrict nor favor any mode of surface transport. With regard to the use of special trains, the ICC issued an environmental impact appraisal which concluded there was no compelling safety reasons for requiring their use.

15. Emergency preparedness in local communities through which nuclear fuel is transported should be improved. DOT should train and equip local emergency personnel along transportation routes and notify communities of impending shipments.

The federal agencies responsible for developing guidance and planning for transportation accidents involving radioactive material are DOT and FEMA. Both agencies have ongoing programs directed toward improving emergency response, including training of personnel. In addition, DOE maintains a radiological assistance team which is available to advise and assist local authorities at the scene of an accident.

With regard to prenotification, NRC regulations were recently amended to require licensees to provide advance notification of spent fuel and large quantities of nuclear waste shipments to state governors or their designees. This requirement became effective in July 1982.

16. Some casks may have faulty welds that could fail in the event of a highway accident.

This is conjecture. The CEP report does not identify any instances of faulty welds. All of the spent fuel casks which are presently in use were constructed under NRC approved quality assurance plans. We have no reason to believe that any cask presently authorized has faulty welds.

17. NRC damage estimates are unrealistically low and could run to the tens of billions of dollars and hundreds of thousands of early and latent cancer fatalities.

The CEP characterization of NRC estimates of consequences from trucking accidents involving spent fuel is incorrect. NUREG-0170 estimates $200 million and one latent cancer fatality as the consequences resulting from a loss of coolant accident from a truck accident involving spent fuel in a large city. Such an accident is estimated to have a very low probability of occurrence.

Although the NRC staff has not had time to thoroughly review the basis of the CEP estimates, previous statements by these sources appear to be based on excessively large releases from the cask and upon a hypothetical sequence of events that appear to violate physical law and which employ health effect estimators that are much larger than even the upper bound values used by most of the technical community, including international health agencies.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

OCT 21 1982

Dr. Marvin Resnikoff
Project Director
Council on Economic Priorities
84 Fifth Avenue
New York, New York 10011

Dear Dr. Resnikoff:

Enclosed are my comments on your draft report, "The Next Nuclear Gamble." In order to get my comments to you in time for your rewrite, I have transmitted these comments by telephone to Nancy Bernstein, CEP Research Assistant, during the period September 29 - October 6, 1982. The comments enclosed here are a documentation of those previous verbal comments. They are based on notes Nancy Bernstein was kind enough to take and send to me. In several areas I have clarified her notes or made their wording more precise.

Before commenting on your draft report I would like to remind you of the conditions under which I agreed to serve on your Advisory Panel, which is reviewing the draft report. These conditions were agreed to by you in a telephone conversation of October 19, 1981 with me and were stated in my October 27, 1981 letter to you. The conditions are:

1. The authors of the report will take full responsibility for the views expressed in it.
2. Membership in the Advisory Panel will in no way be taken as endorsement of the study or its findings.
3. The report will contain a statement delineating the role of the Advisory Panel as indicated above.
4. In my participation I will be presenting my own personal professional views, not representing the position of the NRC.

With regard to item (3) above, the draft report, as far as I was able to determine, did not contain any statement indicating the role of the Advisory Panel. I believe a statement delineating its role, as agreed to by you should be added.

I have not reviewed the entire report. I have confined my review to those chapters containing the factual basis for your conclusions and recommendations. Because conclusions are based on facts and value judgments and because value judgments are inherently a matter of personal preference, I did not review Chapters I and IX, where personal judgment is used to draw conclusions.

However, in those cases where I have identified problems (e.g., suspected errors and misinterpretations) in the factual basis presented elsewhere in the report, consideration should be given to revising findings, conclusions, and recommendations to the extent that they are changed or impacted by problems identified in the factual basis.

I have two types of comments on your draft report. Detailed comments are enclosed; general comments follow. In general I was disappointed by the draft report. It is not as scholarly, either in form or content, as I think it should be. Some of the general problems throughout the report include:

1. A pervasive bias all through the study is more than distracting, it jeopardizes the credibility of the entire work and each part. Even conclusions and findings which have been well substantiated and logically drawn may be ignored because of the biased and subjective treatment of facts and issues throughout the report.

2. Many statements of "fact" are unsubstantiated and several conclusions do not follow logically from antecedent material.

3. In some instances literature cited has been misinterpreted and an incorrect conclusion has been drawn.

4. In a few instances statements are made that appear to be technically wrong. Since it is possible that I have misinterpreted these statements, it may mean the text needs to be clarified. Alternatively more justification or explanation may need to be provided. However, these instances may indeed represent technical errors.

I believe a report on the topics you have chosen could provide an important input to a discussion and decision on a significant issued affecting public health and safety. I believe careful examination of facts and ventilation of issues by persons of differing points of view is an important input to an effective regulatory program. However, unless some of the problems mentioned above, as elaborated on in my detailed comments, are addressed, I believe your report will fail to fulfill its potential utility. In fact, as currently written I believe the report may not only muddy a discussion of facts and policy wit inappropriate emotionalism, bias, and misinformation, it may also discredit and otherwise compromise the environmental activist constituency to which you consider yourself to belong. I hope many of the problems I have identified will be rectified and that my comments help you to achieve a more correct, useful report.

Sincerely,

Norman A. Eisenberg
Transportation and Materials
  Risk Branch
Office of Nuclear Regulatory Research

Enclosure: As stated

DETAILED COMMENTS

CHAPTER 2:

p. 3 "During refueling, the reactor is particularly vulnerable to accidental radioactive releases:. This is an unsubstantiated statement. As far is I understand it, the reactor is not up to temperature when it's being refueled so it's not particularly vulnerable. If it's true that releases have occurred during refueling then the instances in which it has occurred should be noted.

p. 4 1st paragraph: What does the fact that the reactor is producing electricity have to do with how safe the reactor is?

p. 5 It is my impression that reprocessing never got off the ground because the Carter Administration forbade it on the basis of its being a safeguards problem (nuclear proliferation). The whole history of reprocessing is very well documented in Science articles. Why not cite them?

p. 6 You get the impression here, in the description of the low-level waste sites that the wastes are on the surface of the ground instead of buried.

CHAPTER 3:

p. 4 1st paragraph contradicts what was said before about why reprocessing was not begun. I suggest having a broader base of citations on this issue, "Science and Nuclear News.

p.7 3rd paragraph: Implication here is that there's a conspiracy; this is example of a biased discussion; would not it be better to say DOT did not pre-empt..." rather than "The time was not ripe to overrule New York City's health code..."

p. 11 Footnote at the bottom of the page: is the NAS study citable? Has it been published yet? In its final form?

CHAPTER 4:

No comments. I don't see how this relates to the overall study. Also this chapter is dull.

CHAPTER 5:

General Comment: I do not like the idea of the Boxes; I think this format is inappropriate to a scholarly study, more appropriate to a Sunday supplement.

p. 22 Beginning of first paragraph: Misleading wording makes it sound like the test barrier is more yielding than a bridge abutment.

p. 28 Footnotes 121a-e are non-existent.

p. 30-31 Discussion about transport studies done by Sandia National Lab. The point seems to be that Sandia has conflict of interest, that they are not objective and that they bias their technical studies to promote the industry point of view. Furthermore, Sandia is portrayed as a monolith, which it is not. The work that Sandia did for the NRC, was not done through the TTC. The NRC has bent over backwards to assure that Sandia did work with an unemcumbered point of view. In addition to maintaining separate staffs for NRC and DOE work, as well as separate management chains at Sandia, additional measures were instituted. During the Urban Study an Ad Hoc Task Group was established to look over the NRC's and Sandia's shculders to assure objectivity and the study was given lots of public visibility, also to encourage broad input. Resnikoff served on the Ad Hoc Task Group; if he had problems with the objectivity of the technical analysis, why didn't he speak up then. I find this particular paragraph personally offensive, because it portrays the Sandia staff as unscrupulous scientists willing to compromise their work and reputations for a venal purpose. It portrays the NRC as, at best, dupes or, worse, co-conspirators. I believe neither to be the case. It is ludicrous to me that the report suggests complicity between the NRC and DOE Sandia researchers and their sponsors, when in fact I have personally observed and experienced a degree of antagonism between the two groups. Finally, the "questions regarding Sandia's objectivity" are not substantiated.

p. 31 "perfect record", "a myth exists"- this is emotional wording. I thing, it would be better to say, "Industry's position is that..." Some incident reports cited here are not for commercial shipments, e.g., #115 - summary of incidents from 1957 - 61. Doesn't perfect record refer to the absence of deaths, not incidents?

Last sentence in the 2nd paragraph about similar shipments is poorly worded.

p. 31a DOT Responsibilities, that shipping casks are said to be "virtually industructible should be footnoted. Next sentence, "Because of NRC's effective regulations of licenses' this doesn't make sense. Better to say, "Because of NRC's charter to regulate licenses, there is an emphasis...."

p. 53 Last section compares the cost of large storage casks and then regular storage casks. How come you left out the cost of the aquisition of the larger cask? Someone had to buy the cask. This seems to be an unfair comparison.

CHAPTER 5:

p. 6 At the top: How can rules on exposure to transport workers not apply to transportation? This needs to be clarified.

p.11 Middle of last paragraph: Interchanging of the words carrier and shipper is confusing. Is not the utility the shipper? Perhaps the term shipping agent should be introduced.

p. 12 What does possession of the fuel have to do with coordinating response to an accident? The connection needs to be made more clear, so the conclusion appears logical.

p. 16 Citation #60 doesn't make sense.

p. 17 Middle paragraph: Accident severity distribution: The standard is a performance standard not directly related to real accident situations. Later, there's a quote from Barker that states that tests do not purport to mimic a real set of accidents, but just be representative of what might be experienced. Your argument should address itself to the appropriateness of a performance standard rather than to the pretty obvious fact that the current standard does not attempt to duplicate accident conditions.

p. 19 In the discussion of chemicals and the temperatures at which they burn, there is too much switching from 'flame' temperatures to 'gas' temperatures and back. You can't compare apples and oranges. This issue comes up again later. See Table 5. Please carefully differentiate between adiabatic flame temperatures, empirical flame temperatures, and flame temperatures under test and accident conditions. They are all different.

p. 20, 6 lines down the page: I question the ability to create an explosive mixture in a closed cask when you have a reduction reaction going on. Zirconium is reducing the water. How does the hydrogen become explosive without any oxygen? Do you assume that there's air as as well as hot steam in the cask? At TMI there was air already in the containment. When hydrogen was generated in the reactor vessel, it flowed through the relief valve into the containment where it could combine with the oxygen from the air there. Where is the similarity in a cask accident? How do you get two enclosures, one with air in it?

p. 20 How does pre-notification help put the fire out more quickly? This is another example of logic I fail to follow. What basis is there for believing the fuel cladding could shatter?

p. 21 Last sentence: It is not the intent of the regulation to subject a cask to the "worst credible accident." Why argue based on this assumption?

p. 57 Mid page, Fire duration: How was this calculated? If you spill flammable liquid it will continue to spread and also get burned off. What assumptions are you making about the quantities involved? It's very difficult to calculate this, and one must make assumptions about the rate of spill and topography of the spill location.

p. 58 Last 2 lines in 1st paragraph: Citation #233 looks like the quote is from an AEC report, but it's an NRC report, NUREG 0170.

Box 1, Page 3: at bottom, "Had the fuel been leaking in transit" Sounds like the fuel is leaking out of the rods. Was the cladding perforated? Was the coolant leaking out of the cask in transit? This can be described more clearly.

Box 3: Could use a date.

Table 5 xx Was this based on another table? (NUREG 0744)? If so, the the authors should make a citation to it.

CHAPTER 6

p. 1 2nd paragraph, after the second dash "educated guesses are made to develop..." I don't understand what you are talking about. This needs to be clarified.

p. 2 1st paragraph: Might be better to cite the studies or reports that go through these arguments. A good point is being made, though. Perhaps you should have a separate chapter on decision making (there are a lot of Risk Acceptance Papers). There is also extensive literature about making these types of value judgments.

2nd paragraph: What disasters are being talked about? "While dictionaries..." This is a garbled sentence.

The discussion of risk through the lottery tickets discussion is poorly worded.

Five lines from bottom: The sentence that begins "The concept is obviously a gross oversimplification..." is, I believe, untrue as written.

p. 4 Bottom of first paragraph: How do you make mathematical models to generate data? It's a strange concept and does not seem familiar to me.

p. 5 7 lines from bottom "Nowhere in the NUREG study are there any indications of the extremely tentative nature of the BNWL data." Not true. The report cited does indicate the nature of its extrapolations. See NUREG 0170, Appendix A. The data's tentative nature is made clear and it states that only part of the group of people were surveyed, for example. To say "nowhere" is inaccurate.

"When the resulting evaluation didn't make sense....to come with answers that looked good." This is an accusation of professional skuldugery. What's the basis?

p. 6 Last sentence in 1st paragraph: The latent cancer fatalities estimates were not just based on the 16 incidences for spent fuel shipments but from a larger base; this appears to misrepresent NUREG/CR 0743.

p.6 2nd paragraph: "To assess the veracity..." This illustrates the bias inherent in this report. Most investigators would assess the accuracy of an analysis. Have you presumed the authors are liars?

2nd paragraph, 5th line: How would you incorporate this into the analysis? The study indicates that the effect of human error would be small if you are looking at risk. I believe it is hard enough to analyze accidents and QA deviations separately. How would you propose that synergistic effects be modeled?

Bottom of p. 6, top of p. 7: This is cutesy verbiage and snide. Another example of mindset and bias. The one report that discussed crash tests was from the DOE side of Sandia. The analysis of human error was done by the NRC side of Sandia. Earlier in the report you accuse these groups of being in cahoots. If they were in collusion, why aren't their stories (i.e., analyses) identical?

p. 7 Bottom paragraph: A valid point but, this refinement in the analysis seems to me to be at the frontier of numerical credibility.

p. 9 Bottom of 1st paragraph: Research lab materials shipments cannot be compared to commercial shipments of spent fuel.

p. 11 Last paragraph: First you talk about one assumption, then it becomes "many of these assumptions." Basis?

p. 16 1st paragraph, in the middle: What's the basis that it's more likely for speeders to have accidents? According to "Transportation and Traffic Engineering Handbook" p. 855 "Accident - involvement rates are the highest at very low speeds, are lowest at about the average speeds, and increase again at very high speeds."

p. 16 Bottom of p. 16, top of p. 17: Why not cite the report instead of saying personal communication?

p. 18 2nd paragraph, 2nd sentence: "Clearly trains move, on average, as rapidly as trucks" what's the basis? It needs a citation because it's not obvious.

p. 19 Top 2nd sentence: How can the momentum or impulse of an impact be equated with force from crush? How do you compare the two?

2nd paragraph, 2nd sentence: See standard reference, WASH 1238, AEC Report.

p. 21 Bottom paragraph: How extensive was the fire department survey? Is it statistically valid? Why don't you give numbers as well as percentages?

p. 26 2nd paragraph: Last sentence is wrong; A sabotage event doesn't assume any coolant gets out. Fuel solids do get out which would be much more toxic than if coolant escapes. These are not comparable source terms. It is gross misinterpretation to cite sabotage consequences for an accident.

p. 27 Middle paragraph: "If a long duration..." 5 lines from bottom of paragraph What is the basis for this statement? A very specific statement considering the complexity of the analysis.

p. 28 1st paragraph, last sentence: Citation on p. 98 of NUREG study applies to sabotage; does not relate to the accident scenario being dealt with here. This may be a valid point but inappropriate data is used in the attempt to back it up.

Middle of 2nd paragraph: 6 lines from bottom, I believe these extrapolations from the TMI accident to a postulated cask accident are invalid, because the environment and inventories are so different.

p. 29 2nd paragraph, 2 sentence: The NRC contractor states in the beginning that he believed these environments cannot be produced in an accident. Unrealistic situations were postualted to determine where the NRC should put research money in trying to evaluate source terms for highly improbable events.

p. 30 Nakai and Shivata use unrealistic emissivities. Had they been more realistic, they would have gotten lower temperatures.

p. 38 Why use unconventional dose conversion factors? (There's a a great difference, e.g., between 7,000 lcf's per million person rems to the more conventional 125 lcf's per million person rems).

p. 37 At bottom: How is the area calculated? How was the simplification done? Which radioactivity is in which areas? I would like to be able to repeat the calculations.

CHAPTER 7

p. 2 Bottom: "All storage methods...." What's the difference between shielding and a barrier to emission of radiation?

p. 7 2nd paragraph, middle: How will this happen? Are you postulating that fission would re-start? It won't get nearly as hot as a reactor. How is it much more serious than a reactor meltdown? Where is the substantiation for these statements?

p. 8 2nd paragraph, middle: "In October 1975, the NRC approved...." Do you mean compaction or by re-racking? Not sure about what the point is here. Doesn't seem clear.

p. 30 Last sentence "~~A~~critical reaction...." Is this true? An atomic weapon doesn't have moderators.

p. 31 Last sentence: What's the basis for the statement that the high temperature would cause damage to all the fuel rods?

p. 32 Another example of bias: 9 lines from bottom; "leading to latent cancer fatalities" Suppose excess cancer fatalities were .005, would you still say this? You say this in a too deterministic and causal way. Better: "...a dose that could cause latent cancer fatalities."

p. 34 2nd sentence is garbled. Is it two or three stability categories? I am not sure what your are saying.

p. 55 Middle of 2nd paragraph: How are volatiles going to get into the coolant? I am not sure they can or will.

p. 58 2nd paragraph: Are you sure you want to say "radio" traffic? This is strange.

p. 60 Middle paragraph: If the radioactivity attaches itself to the sediment won't the material be buried?

p. 66 4th line down is a little cutesy. Why not say that fish meal is commonly used for chicken feed, a more prevalent entry into the food chain than gefilte-fish?

Last paragraph: "If a ship..." This is hard to believe. There's much more radioactivity in a reactor. The thermal driving forces are much greater. What is the basis for believing a marine accident could be equivalent to a major reactor accident?

p. 69 Last paragraph: E. Jakel says why not cite the regulation instead of quoting one person (see NRC regulations that deal with indemnity; it's a footnote in one of the Appendices).

p. 72 End of 1st paragraph: Jakel did not know he would be quoted. You should get a more grammatical statement from him.

p. 73 Bottom: An apparent misunderstanding. Jakel meant that there's no actuarial (not actual) basis for the $560 million limitation.

GENERAL COMMENT: There's barely enough information in the study as a whole for the calculations to be duplicated by someone else. However, duplication of results by an independent person is the standard for scientific work. Please indicate in an Appendix how your calculations were made.

18. Used fuel should be stored at reactor sites and only be shipped to a permanent federal depository.

Congress has decided this issue and to a large extent agrees with the CEP recommendation. The recently enacted Nuclear Waste Policy Act firmly establishes that utilities have the primary responsibility for interim spent fuel storage through effective use of existing onsite storage capacity or by adding new storage capacity in a timely manner. Only after onsite storage capacity is exhausted, including possible onsite storage at other plants in the same utility system, would offsite storage be provided by the federal government. The amount of offsite storage capacity that will be provided by the government is limited to 1900 tons. Thus, the bulk of used fuel will be stored at reactor sites until a permanent site is available. The number of transshipments between reactors and shipments to the temporary federal storage site will be relatively small. The Act does not prohibit contractual arrangements between utilities and private firms for storage of fuel at away-from-reactor facilities, but the availability of such storage is very limited. The General Electric Morris Operation is the only operational away-from-reactor storage facility possessing an NRC license and the available storage capacity at this facility is largely committed.

QUESTION 18. Please describe the conclusions of NUREG/CR-2239, "Technical Guidance for Siting Criteria Development." What was the purpose of this report? Does this report represent a new generic analysis of the risk of reactor accidents? Does this report change the Commission's overall perception of reactor risk? Do the conclusions reached in this report suggest a need to reexamine any of the Commission's existing regulations, including those related to emergency planning and siting, in order to impose more stringent requirements? Please explain. What is the probability of experiencing the peak consequences for a given plant as reported in the Washington Post article on this subject?

ANSWER

The Sandia Study, NUREG/CR-2239 (or SAND81-1549), is entitled "Technical Guidance for Siting Criteria Development." Its purpose was to develop the technical guidance to support the formulation and comparison of possible siting criteria for nuclear power plants. It includes information on (1) consequences of hypothetical severe accidents; (2) characteristics of population distributions around current reactor sites; (3) site availability within the continental United States; and (4) socioeconomic impacts of reactor siting.

The Sandia Study is not a new generic analysis of the risk of reactor accidents, it merely assumes the occurrence of several accidents of different severity and calculates the range of possible consequences at U.S. reactor sites. Although the Sandia Study provides us with useful analyses of the importance of various siting factors, it does not change our overall perception of reactor risk. On the contrary, the results presented in this report are consistent with those presented in the Reactor Safety Study (WASH-1400) and later publications. The results in the Sandia Study also give us assurance that our present reactor siting criteria are not seriously flawed, and that it is reasonable to postpone further consideration of changes in siting criteria until new information on radioactive source terms is available .

The news stories have concentrated on the peak, or maximum calculated values of consequences. The likelihood of occurrence of these most severe consequences is very low. The exact value of this low probability is, of course, quite uncertain. But the fact that it is very low is beyond reasonable dispute, since the necessary sequence of events is a combination of low probability events. This report assumes that the annual probability of full scale core melt at a typical plant is 1 chance in 10,000 and that the probability of large scale release resulting from a full scale core melt, is 1 chance in 100,000. These assumptions are supported reasonably well by existing risk studies including both predictive studies and analysis of operating experience. The siting study merely assumes these probabilities of core melt and large release, but it calculates further probabilities based on meteorology and population data. The analyses indicate an annual probability of 1 chance in 10 that anyone at all will be killed if a large release occurs. Further, there is 1 chance in 10,000 that weather sequences

QUESTION 18.

and wind direction could combine to produce the very unlikely scenarios which led to the maximum calculated consequences. The staff estimates that these are 1 chance in 1 billion events. In addition, the present calculations incorporate a conservative bias in the emergency response assumptions for the extreme cases which leads to a conservative overestimation of the number of deaths or injuries.

The maximum consequences cited in the news reports are pessimistically overstated estimates for very low probability sequences of events. The results of the Sandia Study have not increased our estimates of reactor risk. On the contrary, they confirm the acceptability of current emergency response policy (see question 48).

QUESTION 19. Please provide a comprehensive summary of all emergency planning issues that have been raised in pending licensing proceedings, and the Commission's response to each such issue.

ANSWER.

There are 24 cases presently pending before the Commission or its adjudicatory boards in which intervenors have sought to raise emergency planning issues. In 22 of these cases, the adjudicatory boards have admitted for litigation the emergency planning contentions proffered by the intervenors. To date, the Commission staff has filed testimony responding to these contentions in 10 of the cases. If the admitted contentions related to onsite emergency planning issues the testimony was prepared by the NRC staff; if the contentions related to offsite emergency planning issues the testimony was prepared by officials of the Federal Emergency Management Agency. A compilation of the admitted contentions and a copy of the filed testimony has been prepared; however, because of the voluminous nature of the documents, which consist of four volumes, this compilation will be provided by separate cover.

INDEX
EMERGENCY PLANNING - CONTENTIONS

BOOK 1

AFRRI

1. Contention 3

BIG ROCK

2. Christa Maria's Contention 9
Testimony of Jesse Pagliaro, NRC Reg.III
Thomas J. McKenna, NRC
Danny B. Bement, FEMA

BYRON - League of Women Voters 19, 108; DAARE/SAFE 3

3. Contentions
4. Testimony of Monte Phillips, NRC
5. Testimony of Gordon Wenger, FEMA
6. Amendment & Consolidation of Contentions 3, 19 & 108

CALLAWAY - Contentions 1,2&3

7. Reed's Amended Contentions 1,2&3
NRC Staff's Resp to Reed's Amended Contentions

CATAWBA

8. Palmetto Alliance 27; CESG 8

CLINCH RIVER

9. Contention 9

CLINTON

10. Contention 1

COMANCHE PEAK

11. Contention 22;
FEMA Staff testimony of Albert Lookabaugh & John Benton
NRC Staff testimony of David M. Rohrer

DIABLO CANYON

12. Testimony - Low Power Testing Program
John R. Sears, NRC
G. Norman Lauben, NRC
Bartholomew C. Buckley, NRC

13. Testimony - Full-Power Testing Program
John R. Sears, NRC

14. Testimony - Brian K. Grimes, NRC
Dean M. Kunihiro, NRC/Region V

15. Testimony - John W. Eldridge, Jr., FEMA

FERMI - CEE 8

16. Testimony of Falk Kantor, Thomas Urbanik II & Rick J. Anthony on Evacuation of the Stony Pointe, Michigan Residential Area

INDIAN POINT - Contentions 3&4

17. ASLB MEMO & Order dtd 2/7/83

BOOK 2

18. Supplemental Testimony of John R. Sears on Contention 3
19. Testimony of Byron Grimes, NRC
20. Testimony of John Sears, NRC
21. Testimony of Dr. Thomas Urbanik, III, Texas A&M University
22. Testimony of Philip McIntire, Ihor Husar & Joseph H. Keller

LIMERICK

23. Contention 8

MIDLAND

24. Sinclair Contention 2

PERRY

25. See Issue #1, LBP-81-24, 14 NRC 175, 186-192

SAN ONOFRE

26. Testimony of John Sears - Low-Power Testing
Testimony of G. Norman Lauben & Patrick D. O'Reilly

BOOK 3

27. Testimony of John Sears - GUARD Contentions (2 documents)
Testimony of Kenneth W. Nauman, Jr. - Guard Contentions (2 documents)

28. Testimony of John Sears - EPZ Contentions

SEABROOK

29. Supplement to Petition to Intervene & Contentions of The Coastal Chamber of Commerce of New Hampshire
Coastal Chamber of Commerce of New Hampshire's Resp to Applicant's Resp to Suppl to Petition to Intervene & Contentions of Coastal Chamber of Commerce of New Hampshire
NRC Staff resp to suppls to Petitions to Intervene of Coastal Chamber of Commerce

30. Further Amendment of Petition for Leave to Intervene of Sun Valley
The NRC Staff response

31. NECNP Supplemental Petition for Leave to Intervene
NECNP's Reply to the Responses by the Applicant & the NRC Staff to NECNP's Contentions
32. NECNP Supplemental Filing on Emergency Planning contentions

33. NRC Staff Resp to Contentions filed by NECNP, Contention III
NRC Staff Resp to Contentions filed by NECNP, Contention II.B.4

34. Supplement to the Petition to intervene of the Commonwealth of MA
NRC Staff Resp to Contentions Filed by New England Coalition on Nuclear Pollution & Commonwealth of MA
35. Brief of the Commonwealth of MA in Support of its Contentions

36. Amendment & Supplement to Petition for Leave to Intervene ... of the State of New Hampshire & Gregory Smith, ATTY GEN. of the State of New Hampshire
NRC Staff Response to State of New Hampshire

37. Resp of Intervenor Seacoast Anti-Pollution League (SAPL) to Memo & Order setting Special Pre-Hearing Conference
NRC Staff Resp to Amended Petitions of SAPL, New Hampshire and Sun Valley

SHORESHAM

38. First Amended Consolidated Emergency Planning Contentions

39. Staff Objections to First Amended Consolidated Emergency Planning Contentions

TMI-1

40. Contentions

41. Testimony of Frederick J. Bath and Vernon E. Adler of the FEMA on Certain Offsite Emergency Planning Contentions

BOOK 4

42. Testimony of FEMA's Vernon Adler & Frederick J. Bath on Contentions related to Offsite Emergency Preparedness

43. Jt Testimony of NRC Staff's Stephen Chestnut & FEMA's Frederick J. Bath on Contentions Related to Onsite/Offsite Emergency Prepredness

44. NRC Staff Testimony of Stephen H. Chestnut on Contentions related to Onsite Emergency Planning & the Licensee's Emergency Plan

45. NRC Staff Testimony of Dale E. Donaldson on Emergency Planning Contentions

46. NRC Staff Testimony of Joseph R. Levine on Contentions Related to Onsite Emergency Planning

47. NRC Staff Testimony of Harold T. Peterson, Jr. on ECNP Contention 2-33 (EP-11)

48. Testimony of Thomas Urbanik II on Evacuation Time Estimate study for TMI

49. NRC Staff Testimony of Dale Donalson and Stephen Chestnut on Licensee's Response in 6/2/81 Exercise and NRC Staff's Exercise Report

50. NRC Staff Testimony of Stephen Chesnut on Unresolved Onsite Emergency Response Matters From the 2/9/81 NRC STaff Testimony of Dale E. Donaldson on Contentions EP-4D and EP-18

51. Attachment 3 to FEMA's Interim Findings and Detemrination of 6/16/81

STAFF EXHIBITS

52. 16 NUREG-0746/Emergency Preparedness Evalution for TMI-1

53. 17 Affidavit of Stephen Chestnut on Closeout Inspection on 30 Health Physics-Emergency Planning Significant Findings From Inspection 50-289/80-22, on Licensee's Shift Manning Using One Licensed Senior Reactor Operator Rather than two and on Containment High Range Monitors for Emergency Repsonse

54. 18 6/16/82 Memo for BGrimes fm RJaske re. Interim Findings & Determination Relating to the Status of State and Loca Emergency Preparedness Around TMI Fixed Nuclear Facility

55. 19 FEMA Responses to ASLB Questions on extent to Which Panic and Psychological Stress were Factored into NUREG-0654/ FEMA-REP-1 ...

BOOK 5

56. 20 Attachment 1 to FEMA's Interim Findings & Determinations of 6/16/81

57. 21 Attachment 2 to FEMA's Interim Findings & Detemrinations 6/16/81

58. 23 Supplement 1 to Emergency Preparedness Evaluation

59. 24a Memo for BGrimes fm RJaske re. Interim Findings & Determination Relating to the Status of State and LOCA Emergency Preparedness Around the TMI Fixed Nuclear Facility for York County dtd 9/18/81

60. 24b PA .. Exercise Site Specific to TMI Observations and Recommendations of 9/11/81

UCLA

61. Contention XXI

62. Emergency Preparedness Evaluation Report

WATERFORD

66. Contentions

64. Testimony of Brian K. Grimes

65. NRC Staff Testimony Donald J. Perrotti re. Emergency Planning Contention 17/26

66. NRC Staff Testimony of Thomas Urbanik II re. The Evacuation Time Estimate Study

67. FEMA Testimony fo John W. Benton & Albert L. Lookabaugh re. Emergency Planning Contention 17/26

68. Ltr to ASLB fm STurk transmitting NRC Staff Testimony of Donald J. Perrotti and the FEMA Testimony

WOLF CREEK

69. Christy Contention

ZIMMER

70. Testimony of RW Meyer, PTFrost & JCHeard, Jr. of FEMA & BEWilliams of DOT Fed Highway Administration

71. Direct Testimony of TJMcKenna re. Zimmer Area Citizens; Contention that Brown County, Ohio Must have a Radiological Emergency Reponse Plan

72. Admitted Contentions

QUESTION 20. Please provide a chronological list of the nuclear power plants for which operating licenses have been issued since 1970. In addition, please provide a chronological list of the nuclear power plants that the Commission expects to issue operating licenses to over the next five years.

ANSWER.

See attached.

ANSWER 20.

Operating Licenses Issued Since 1970
(Full Power)

Robinson 2	09/23/70
Point Beach 1	10/05/70
Millstone 1	10/26/70
Monticello	01/19/71
Dresden 3	03/02/71
Surry 1	05/25/72
Turkey Point 3	07/15/72
Pilgrim 1	09/15/72
Palisades	10/16/72
Quad Cities 1	12/14/72
Quad Cities 2	12/14/72
Surry 2	01/29/73
Oconee 1	02/06/73
Vermont Yankee	02/28/73
Point Beach 2	03/08/73
Turkey Point 4	04/10/73
Maine Yankee	06/29/73
Ft. Calhoun 1	08/09/73
Indian Point 2	09/28/73
Oconee 2	10/06/73
Zion 1	10/19/73
Peach Bottom 2	10/25/73
Zion 2	11/14/73
Brown's Ferry 1	12/20/73
Ft. St. Vrain	12/21/73
Kewaunee	12/21/73
Cooper Station	01/18/74
Duane Arnold	02/22/74
Prairie Island 1	04/05/74
TMI 1	04/19/74
Arkansas 1	05/21/74
Brown's Ferry 2	06/28/74
Peach Bottom 3	07/02/74
Oconee 3	07/19/74
Calvert Cliffs 1	07/31/74
Hatch 1	08/06/74
Rancho Seco	08/16/74
Fitzpatrick	10/17/74
Cook 1	10/25/74
Prairie Island 2	10/29/74
Brunswick 2	12/27/74
Millstone 2	08/01/75
Trojan	11/21/75
Beaver Valley 1	01/30/76
St. Lucie 1	03/01/76
Indian Point 3	04/05/76
Brown's Ferry 3	07/02/76
Brunswick 1	11/12/76
Calvert Cliffs 2	11/30/76
Salem	12/01/76
Crystal River 3	01/31/77
Davis Besse 1	04/22/77
Farley 1	06/25/77
North Anna 1	11/26/77
Cook 2	12/23/77
TMI 2	02/08/78
Hatch 2	06/13/78
Arkansas 2	09/01/78
North Anna 2	08/21/80
Sequoyah 1	09/17/80
Farley 2	03/31/81
Salem 2	05/20/81
McGuire 1	07/08/81
Sequoyah 2	09/15/81
LaSalle 1	08/13/82
San Onofre 2	09/07/82
Susquehanna 1	11/12/82
Summer 1	11/12/82

ANSWER 20. (Continued)

Low Power Testing Licenses Issued:

Grand Gulf 1	06/16/82
San Onofre 3	11/15/82
McGuire 2	03/03/83

Licenses to be Issued in the Next Five Years:**

FY 1983:

San Onofre 3 (Full Power)
St Lucie 2
Waterford 3
McGuire 2 (Full Power)
Grand Gulf 1 (Full Power)
Diablo Canyon 1**
LaSalle 2
Fermi 2
Palo Verde 1
Watts Bar 1
WNP-2
Zimmer*

* "Order to Show Cause and Order Immediately Suspending Construction" issued 11/12/82 will affect construction completion. Slip cannot be estimated at this time.

** Low Power License is suspended. License is currently scheduled to be reconsidered.

FY 1984:

Midland 2
Shoreham 1
Comanche Peak 1
Byron 1
Perry 1
Midland 1
Susquehanna 2
Clinton 1
Callaway
Catawba 1
Diablo Canyon 2
Palo Verde 2
Watts Bar 2
Seabrook 1

ANSWER 20. (Continued)

FY 1985:

Wolf Creek 1
Comanche Peak 2
Limerick 1
River Bend 1
Braidwood 1
Bellefonte 1
Harris 1

FY 1986:

Palo Verde 3
Millstone 3
WNP 3
Beaver Valley 2
Hope Creek 1
Nine Mile Point 2
Braidwood 2
Bellefonte 2
Marble Hill 1
Vogtle 1

FY 1987:

Catawba 2
South Texas 1
Seabrook 2
Perry 2

** The above-listed operating license decisions could be made in the next five years if the applicants maintain their current construction completion schedules.

QUESTION 21: Please provide a summary of all "Committee For the Review of Generic Requirements" activities from November 1981 through February 1983.

ANSWER:

In October 1981, as part of a reorganization of NRC's headquarters and regional offices, the Commission directed that a Committee to Review Generic Requirements (CRGR) be established as one of the key means for controlling new generic requirements placed on nuclear power reactor licensees. The Commission elaborated its guidance in the 1982 Policy and Planning Guidance:

> "Strong measures need to be taken to control the issuance of new requirements... Requirements proposed to achieve incremental reductions in residual risk should be evaluated on a cost-benefit basis... The CRGR, chaired by the Deputy Executive Director for Regional Operations and Generic Requirements (DEDROGR), is expected to assume a central role in reviewing and recommending action in the full range of generic requirements considered by the agency, including backfitting."

The CRGR was established by an EDO directive on October 29, 1981. Members of the Committee were appointed by the EDO from the offices of NRR, IE, NMSS, RES, AEOD and ELD. The DEDROGR is Chairman of the Committee. The Committee serves in an advisory role to review and recommend to the EDO approval or disapproval of requirements applicable to power reactors. To assure that CRGR review does not delay needed new requirements, provisions are included in the CRGR Charter whereby certain emergency requirements can proceed without CRGR review. The Charter also provides for expeditious review (within 2-days) of certain requirements. The Committee typically requires 3-4 weeks to review a new requirement that is routine in nature.

In its 16 months of activity, through February 1983, the CRGR has held 32 meetings and considered 58 separate items, several of them at more than one meeting. A categorization of the items follows:

14	Proposed Rules
10	Bulletins or Circulars
7	Regulatory Guides
14	Major Policy Issues
13	Briefings

Of these 58 separate items, the Committee made the following recommendations to the EDO:

5	Approval Recommended
25	Approval Recommended with Modifications
2	Disapproval Recommended
8	Returned to Sponsoring Office for Additional Work - Still Pending
18	Comments Offered - Recommendation to EDO Not Required

QUESTION 21:

The CRGR has not substantially affected the number of regulations, regulatory guides or bulletins proposed and issued by the NRC. However, the CRGR has affected the number, scope, quality, applicability and burden of requirements contained in these proposals. For example, there has been a substantial reduction in the number of new generic requirements imposed on reactor licensees since the inception of CRGR. For instance, the NRC staff had projected that there would be 1900 new operating reactor licensing actions generated in FY-82, whereas the actual number was less than 900 new actions. Most of this reduction was in the number of multiplant actions and can, we believe, be attributed to the existence of CRGR. Thus, the CRGR had an impact in the NRC staff's achievement of reducing the operating reactor licensing backlog from about 5400 to 3600 actions during FY-82.

QUESTION 22. Please submit a complete summary of all information submitted by licensees in response to IE Bulletin No. 83-01.

ANSWER.

The purpose of IE Bulletin No. 83-01 is to assure that plants using Westinghouse DB type breakers with undervoltage trip devices to trip the reactor take appropriate actions to assure reliable breaker operation. A summary of the information submitted by licensees in response to the bulletin follows:

1. No failures have been reported as a result of the requested tests. Only Indian Point Unit 3, which is in an extended maintenance outage involving the reactor protection system, has not performed the requested tests.

2. The subject breakers are only used in Westinghouse designed plants. Of the thirty-four Westinghouse designed plants, six do not use the subject breakers; Farley Units 1 and 2, McGuire Units 1 and 2, Summer and Yankee Rowe. The Farley, McGuire and Summer plants use DS type breakers with undervoltage trip devices and are therefore covered by IE Bulletin No. 83-04. Since the Yankee Rowe plant does not use an undervoltage trip device with its reactor trip breakers, it is not subject to the concerns addressed in these bulletins.

3. Seven of the twenty-eight plants using the subject breakers had not been maintaining the breakers per the recommendations in Westinghouse NSD Data Letter 74-2, a copy of which was attached to the bulletin. Plants previously not using the guidelines contained in the NSD Data Letter are: Diablo Canyon; Indian Point 2; Salem Units 1 and 2; San Onofre 1; and Sequoyah Units 1 and 2. Some plants reported that they were using the guidelines contained in the NSD Data Letter with certain exceptions (e.g., the maintenance interval had been extended from the recommended 9 to 12 month interval to either 18 months or during refueling). Plants reporting such exceptions were D. C. Cook Units 1 and 2, Indian Point 3, North Anna Units 1 and 2, Surry Units 1 and 2 and Trojan. All the above plants stated that their maintenance program would be revised to conform with the interval recommended in the NSD Data Letter.

4. Because the lubricants recommended in the NSD Data Letter are no longer commercially available, some plants reported that they were using lubricants other than those recommended in the NSD Data Letter. Plants using lubricants other than those recommended in the NSD Data Letter and the lubricants being used are: Kewaunee (Molykote C-40); Point Beach Units 1 and 2 (Sila-Chem or Crown Silicone); and San Onofre Unit 1 (Molykote 321R). Kewaunee and San Onofre further stated that the lubricants being used are considered acceptable alternatives by Westinghouse. Westinghouse has now recommended lubricants which are commercially available.

QUESTION 23. Please submit a complete summary of the results of the licensee evaluation and testing of electrical circuit breakers used in the automatic shutdown systems of pressurized water nuclear power plants performed in response to a Commission request of March 11, 1983.

ANSWER.

The purpose of IE Bulletin 83-04 issued on March 11, 1983 is to assure that plants using breakers with undervoltage trip devices, other than those using DB type breakers, for reactor trip purposes take appropriate actions to assure reliable operation of these breakers. Information and response to this bulletin has been received from the licensees of 12 units recently. Responses from the remaining plants are expected shortly. A summary of a preliminary review of the information received to date follows:

1. Several breaker failures have been experienced during the tests and have been reported to the NRC via the emergency notification system (ENS) or in the licensee reports as requested in the bulletin. Failures reported to the NRC via the ENS involve General Electric AK-2 type breakers as well as Westinghouse DS type breakers. Failures involving the AK-2 type breakers have been reported at the Maine Yankee plant and at the Calvert Cliffs Unit 1 and 2 plants. On March 15, 1983, Maine Yankee reported that three of the eight reactor trip breakers used at the plant failed to open in the required time. One breaker tripped in 1.9 seconds, another in 2.7 seconds, and the third in 10.3 seconds. Maine Yankee further reported that these breakers were subsequently cleaned and lubricated after which they operated within the acceptable response time. On March 15, Calvert Cliffs reported that two of the eight breakers in Unit 1 required approximately 6 seconds to trip and that two of the eight breakers in Unit 2 required approximately 1.5 seconds to trip. In its written report to the NRC dated March 21, 1983, Calvert Cliffs described three additional failures that were detected during additional tests at Unit 1 and three additional breaker failures detected at Unit 2. The report also indicated that these breakers functioned within the acceptable response time subsequent to performing maintenance on the breakers. On March 18, 1983, McGuire 2 reported via the ENS that one of the two reactor trip breakers (DS type) failed to open upon deenergizing the breakers undervoltage trip coil. On March 19, 1983, McGuire 1 reported via the ENS that one of the two reactor trip breakers (also DS type) failed to open upon deenergizing the undervoltage coil.

2. Plants affected by this bulletin include all operating plants designed by Babcock and Wilcox; all operating plants designed by Combustion Engineering, except for the Palisades and Fort Calhoun plants that use contactors for tripping the reactor rather than breakers; and Westinghouse designed plants using DS type breakers with undervoltage trip devices (i.e., McGuire Units 1 and 2, Farley Units 1 and 2, and Summer). Responses received to date for this bulletin are from the following plants: Arkansas Nuclear One Units 1 and 2; Calvert Cliffs Units 1 and 2; Crystal River Unit 3; McGuire Units 1 and 2; Millstone Unit 2; Oconee Units 1, 2 and 3; and Three Mile Island Unit 1.

QUESTION 23.

3. Fifteen failures not previously reported to the NRC are identified in the above mentioned responses. The main reason cited for not reporting these malfunctions was that reporting was not required by the plant technical specifications, (e.g., the malfunctions occurred during preoperational testing or on a spare breaker that was not in service or while the plant was shutdown). Seven of the reported malfunctions did not involve the safety concern that precipitated the bulletin, namely, failure of the breaker's undervoltage (UV) trip device to open the breaker. These seven malfunctions involved failures such as the "Trip Confirm" lights not clearing after the breaker was closed and failure of a breaker to close. Eight of the reported malfunctions were of the type where the UV trip device either failed to open the breaker or opened the breaker in a sluggish manner. These eight malfunctions are highlighted below. Arkansas Nuclear One Unit 1 identified a breaker that failed to open on demand from the UV trip device. This breaker was subsequently tested 10 times successfully and surveillance tested daily until it was ultimately replaced. Calvert Cliffs Unit 1 described two breaker malfunctions, one where the UV device failed to open the breaker and the other where the opening was sluggish. Both breakers were returned to service subsequent to corrective maintenance and testing. Calvert Cliffs Unit 2 had two malfunctions identical to those at Unit 1. Both breakers were returned to service subsequent to corrective maintenance, which included the replacement of the UV device on the breaker that failed to trip with a safety related spare, and testing. McGuire Unit 2 described a malfunction where a breaker failed to open on demand from the UV trip device. This failure was repeated on five occasions during testing that followed the initial failure. Maintenance work was performed on this breaker after which no apparent problems were discovered. This breaker operated satisfactorily when initially tested per the requirements of the bulletin; however, during subsequent testing on March 18, 1983, this breaker again failed to open. The NRC was notified of this latest failure via the ENS as described in our item 2 response, above. Oconee Unit 3 identified a breaker that failed to open while the plant was shutdown and the breaker was being tested per the startup procedures. The cause of the failure was not determined and the breaker was replaced. This failure preceded the sequence of events that occurred in early 1979 which resulted in Combustion Engineering issuing a service letter and the NRC issuing IE Bulletin 79-09. Three Mile Island, Unit 1 reported that an AC trip breaker failed to open during post maintenance testing. The malfunction was attributed to binding of the UV device caused while transporting and installing the breaker. The binding problem was detected and corrected before the system was returned to service. It should be noted that redundant and or diverse trip functions were available for each malfunction cited above.

QUESTION 23.

4. Other salient points of the responses include information submitted by Crystal River Unit 3 and Maine Yankee. Crystal River Unit 3 indicated that the identification and procurement of the breakers ard related parts within its quality program was not consistent and is in the process of being revised. The Crystal River Unit 3 response further states that all installed AK-2 breakers will be upgraded to meet safety related criteria as well as replacement spares or appropriate parts in its supply facility. Further, its procurement procedures will be revised to assure proper documentation is obtained or proper receipt testing is performed to assure appropriate safety criteria are met. Maine Yankee stated that its reactor trip breakers and UV devices have been considered NNS (i.e., non nuclear safety) in the past but that they are now being treated as safety related, and that administrative controls are being revised accordingly.

QUESTION 24. Please submit a summary of the Commission's Long Range Research Plan (NUREG-0961). In addition, please discuss any changes in the program direction or emphasis reflected in this document, compared to NUREG-0784.

ANSWER.

The Commission has authorized the staff to publish this year's LRRP which was supplied to the committee in draft. Commissioners Asselstine and Gilinsky have indicated that they may have comments during the public comment period. The plan is broadly distributed for review and comment as the first step in the development process for the FY 1985 research budget.

This year's LRRP has been restructured into a program-specific framework with each chapter addressing a significant program area.

This year's LRRP includes a priority ranking of general program areas using a methodology described in the plan (Appendix B). To summarize the LRRP, the Appendix B analysis yielded the following five areas as highest priority:

1. Severe Accidents (Chapter 5). The regulatory issue is the realistic treatment of reactor accidents and fission product behavior. A significant research effort will be applied during the next few years to support the reassessment of the regulatory treatment of severe accidents, i.e., the loads on the containment resulting from release of energy and substances such as hydrogen and the fission product release and transport. One of the objectives is a realistic treatment of fission product behavior to provide assurance that the real problem is being addressed. Work on this issue includes studies of transients leading to fuel or cladding damage, the behavior of damaged fuel, fuel melt, fission product released and transport, and concepts for mitigating severe accidents.

2. Pressurized Thermal Shock (Chapter 3). The safety issue is that embrittlement resulting from continued exposure to neutrons is making certain older reactor vessels more susceptible to overcooling transients. The regulatory issues are: How serious is the problem at specific plants? What corrective actions are required and how soon? What are the acceptance criteria? What is an acceptable basis for continued operation while corrective actions are being planned and implemented?

3. Risk Analysis (Chapter 8). The regulatory issue is the introduction and continuing use of probabilistic risk assessment (PRA) as a decisionmaking tool in the licensing review process and in the regulatory review process. In the licensing review process, PRA is used to place in perspective new and recurring unresolved safety issues and generic safety issues in addition to its direct use in licensing decisions. In the regulatory review process, PRA is used as part of the regulatory analysis accompanying changes in NRC regulations, guides, and standards and for setting reactor safety research priorities.

QUESTION 24.

4. Human Factors (Chapter 9). The safety issue is the application of human factors engineering in the design, operation, and maintenance of nuclear facilities. Included in this program is work on control room design and evaluation criteria, personnel qualification and staffing, management and organizational criteria, plant procedures, human reliability, and emergency preparedness.

5. Plant Aging (Chapter 2). The safety issue is the regulation of operating nuclear power plants as they become older to ensure that they continue to meet health and safety requirements. The work is directed toward an understanding of the mechanisms of aging and degradation and toward methods for examining and testing to determine the condition of components. A significant part of this work is concerned with the effect of radiation-induced embrittlement on the structural integrity of reactor vessels in support of work on the pressurized thermal shock issue.

There are no major changes in program direction or emphasis between this year's plan and last year's plan. The above five areas were emphasized in last year's plan.

Minor differences between this year's plan and last year's plan are:

1. The LOFT program does not appear in detail in this year's plan. An International Consortium has taken over sponsorship of the LOFT test program. DOE is the operating agent of the reactor for the consortium.

2. The Severe Accident Program (Chapter 5 in draft NUREG-0961) is defined in this year's plan. Many of the elements of the program were in last year's plan but not described as a single program.

3. A joint NRC-industry research effort to resolve the licensing issues related to the Babcock and Wilcox (B&W) reactor design is a new start described in this year's plan (Section 6.2 in draft NUREG-0961). This effort involves NRC, B&W, B&W Owners' Group and the Electrical Power Research Institute (EPRI) sharing sponsorship of a test program at the B&W 2x4 Integral Test Facility in Alliance, Ohio.

QUESTION 25. When will the staff complete its draft Price-Anderson report and submit that report to the Commission for consideration? What steps does the Commission expect to take upon receiving the staff draft report, and when does the Commission expect to complete the Price-Anderson report and submit it to Congress?

ANSWER.

The staff expects to have its draft on the Price-Anderson report to the Commission for consideration in May. We would expect that the Commission will review and approve the report and develop its recommendation on the need to extend, rescind or modify the provisions of the Act. We would also expect to consult with the Department of Energy who also has Price-Anderson responsibilities. The Commission expects to submit the report to Congress, before the legislatively-mandated date of August 1, 1983.

QUESTION 26. Please provide a list of population concentrations, from highest to lowest, at commercial nuclear powerplants under construction and in operation (1) within 10 miles of each such plant, and (2) within 20 miles of each such plant.

ANSWER

The information requested is provided in Tables 1 and 2 attached, and is based on 1980 census data. The rankings are by site, and would apply equally to each unit on a multi-plant site. The estimates are for residential population only, and do not include transients.

Table 1 - Site Rank Based on Population Within 10 Miles

Rank	Site	0-10 Mile Population Estimate
1.	Zion	249,000
2.	Indian Point	240,000
3.	Limerick	164,000
4.	Three Mile Island	162,000
5.	Beaver Valley	137,000
6.	Millstone	114,000
7.	Shoreham	98,000
8.	Seabrook	90,000
9.	St. Lucie	88,000
10.	Duane Arnold	79,000
11.	Midland	75,000
12.	Catawba	74,000
13.	Perry	74,000
14.	Enrico Fermi	74,000
15.	Haddam Neck	74,000
16.	Surry	73,000
17.	Oyster Creek	71,000
18.	Trojan	65,000
19.	Turkey Point	58,000
20.	Waterford	56,000
21.	Quad Cities	54,000
22.	D.C. Cook	54,000
23.	Susquehanna	52,000
24.	Oconee	51,000
25.	San Onofre	49,000
26.	McGuire	46,000
27.	Fitzpatrick	42,000
28.	Nine Mile Point	42,000
29.	Pilgrim	41,000
30.	Dresden	39,000
31.	Ginna	39,000
32.	Sequoyah	39,000
33.	Palisades	34,000
34.	Cherokee	34,000
35.	Vermont Yankee	32,000
36.	Braidwood	31,000
37.	Maine Yankee	30,000
38.	Peach Bottom	29,000
39.	Zimmer	28,000
40.	Browns Ferry	28,000
41.	Bellefonte	28,000
42.	Robinson	27,000
43.	Arkansas	25,000
44.	Yankee Rowe	25,000
45.	Salem	25,000

Rank	Site	0-10 Mile Population Estimate
46.	Hope Creek	25,000
47.	Monticello	24,000
48.	Prairie Island	23,000
49.	River Bend	22,000
50.	Byron	21,000
51.	Point Beach	21,000
52.	Marble Hill	21,000
53.	Shearon Harris	20,000
54.	Calvert Cliffs	20,000
55.	Diablo Canyon	18,000
56.	Watts Bar	16,000
57.	Davis-Besse	15,000
58.	Comanche Peak	15,000
59.	LaSalle	15,000
60.	Fort Calhoun	14,000
61.	Clinton	14,000
62.	Crystal River	14,000
63.	Rancho Seco	12,000
64.	Washington N3	11,000
65.	Kewaunee	11,000
66.	North Anna	11,000
67.	Fort St. Vrain	11,000
68.	Brunswick	11,000
69.	Grand Gulf	10,000
70.	Big Rock Point	9,700
71.	Summer	8,900
72.	Callaway	7,600
73.	Farley	7,600
74.	LaCrosse	6,600
75.	Cooper	5,700
76.	Wolf Creek	5,500
77.	Hatch	5,300
78.	South Texas	2,700
79.	Vogtle	2,200
80.	Palo Verde	2,100
81.	Washington N1 & N2	1,700

Table 2 - Site Rank Based on Population Within 20 Miles

Rank	Site	0-20 Mile Population Estimate
1.	Indian Point	975,000
2.	Limerick	837,000
3.	Three Mile Island	677,000
4.	Zion	605,000
5.	Shoreham	589,000
6.	Ginna	566,000
7.	Haddam Neck	561,000
8.	McGuire	548,000
9.	Catawba	508,000
10.	Beaver Valley	469,000
11.	Hope Creek	423,000
12.	Salem	405,000
13.	Enrico Fermi	393,000
14.	Waterford	367,000
15.	Turkey Point	358,000
16.	Sequoyah	356,000
17.	Susquehanna	353,000
18.	Midland	348,000
19.	Seabrook	338,000
20.	San Onofre	335,000
21.	Quad Cities	315,000
22.	Fort Calhoun	308,000
23.	Peach Bottom	303,000
24.	Oyster Creek	298,000
25.	Millstone	279,000
26.	Dresden	271,000
27.	Surry	267,000
28.	Perry	258,000
29.	Zimmer	251,000
30.	Byron	249,000
31.	Fort St. Vrain	223,000
32.	Pilgrim	212,000
33.	Shearon Harris	212,000
34.	Rancho Seco	196,000
35.	D. C. Cook	180,000
36.	Duane Arnold	178,000
37.	Cherokee	161,000
38.	St. Lucie	154,000
39.	Oconee	134,000
40.	Browns Ferry	130,000
41.	Vermont Yankee	128,000
42.	Braidwood	127,000
43.	Trojan	119,000
44.	Palisades	117,000
45.	Yankee Rowe	117,000

Rank	Site	0-20 Mile Population Estimate
46.	River Bend	115,000
47.	Nine Mile Point	107,000
48.	Marble Hill	105,000
49.	Fitzpatrick	102,000
50.	Diablo Canyon	101,000
51.	Davis-Besse	100,000
52.	Monticello	98,000
53.	LaSalle	96,000
54.	Calvert Cliffs	95,000
55.	Washington N1 & N2	94,000
56.	LaCrosse	91,000
57.	Maine Yankee	91,000
58.	Prairie Island	88,000
59.	Farley	88,000
60.	Summer	85,000
61.	Watts Bar	83,000
62.	Brunswick	82,000
63.	Point Beach	81,000
64.	Kewaunee	80,000
65.	Robinson	76,000
66.	Bellefonte	70,000
67.	North Anna	62,000
68.	Arkansas	58,000
69.	Washington N3	57,000
70.	Clinton	52,000
71.	Hatch	49,000
72.	Crystal River	44,000
73.	Callaway	42,000
74.	Big Rock Point	39,000
75.	South Texas	33,000
76.	Grand Gulf	32,000
77.	Comanche Peak	32,000
78.	Vogtle	30,000
79.	Cooper	23,000
80.	Wolf Creek	16,000
81.	Palo Verde	11,000

Question 26

QUESTION 27. Please provide a detailed technical justification for the Commission's 10 mile emergency planning zone. What is the statistical likelihood of an accident requiring evacuation of (1) all individuals within the 10 mile emergency planning zone? (2) all individuals within 20 miles of a given commercial nuclear power plant?

ANSWER.

The detailed technical justification for the Commission's 10 mile emergency planning zone is contained in a joint NRC/EPA report NUREG 0396 (attached),* "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans In Support of Light Water Nuclear Power Plants."

The size of the zone was determined after considerable discussions and deliberations, and was based in large part upon source term considerations. The following considerations were used in deciding upon the 10 mile plume exposure EPZ:

(a) Projected doses from the design basis accident/loss-of-coolant accident (DBA/LOCA) used for siting purposes would not exceed Protective Action Guide (PAG) levels outside about 10 miles;

(b) Projected doses from most postulated core melt accidents wouldn't exceed PAG levels outside about 10 miles;

(c) Even for the postulated worst case core melt accident sequences, immediate life threatening doses would generally not occur outside the zone;

(d) Planning for about 10 miles would provide a substantial base for expansion of response efforts if deemed necessary.

Conditional probabilities of exceeding various organ doses as a function of distance are given in NUREG 0396 for core melt accidents. It should be noted that the distance relationships were based in large part upon the WASH-1400 (Reactor Safety Study) source terms. It would be extremely unlikely that all individuals within the 10 mile emergency planning zone would have to evacuate. Just as in any of the more common emergencies involving hazardous materials (such as a chlorine tank rupture), relatively small areas downwind of the accident are actually evacuated. It is difficult to envision conditions which would ever require all of the people within 10 miles to evacuate. The likelihood of such an event would be significantly less than the probability associated with core melt accidents of about one chance in ten thousand. In addition, we cannot envision the conditions which would ever require everyone to evacuate within 20 miles of a commercial nuclear power plant.

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* The attachment has been retained in the committee files.

QUESTION 28 (Part 1). Please provide a complete summary of the quality assurance problems that have arisen at the Marble Hill plant during the past five years. What actions have been taken by (1) the Commission, and (2) the licensee, to correct any deficiencies?

ANSWER.

The Marble Hill Construction Permit was issued on April 4, 1978. Prior to April 1, 1979, the type and number of regulatory problems observed through the routine inspection program were typical of those found at other sites in early stages of construction.

In early April 1979, concerns for concrete quality were identified by our inspection program, and a followup inspection raised concerns about the effectiveness of the licensee's Quality Assurance program in this area. As a result, an Enforcement Conference was held with licensee management by NRC Region III.

On June 12, 1979, the NRC received allegations from a former Marble Hill employee regarding improper repairs of honeycomb areas in the concrete. Region III initiated an investigation on June 22, 1979, and found deficient repairs of concrete, as alleged. As a result of these findings, the licensee stopped concrete activities for safety related structures, and initiated a program to perform non-destructive examinations of various concrete structures, identify and evaluate repaired areas for adequacy and review their entire program for concrete activities. An Immediate Action Letter (IAL) dated June 27, 1979, was issued by the NRC confirming the licensee plans.

While Region III initially concurred in resumption of concrete placement for safety related structures, further detailed inspection led to a site management meeting and a licensee decision to again stop concrete activities for safety related structures. A second Immediate Action Letter (IAL) dated July 23, 1979, was issued documenting this understanding.

On July 25, 1979, Region III also learned that a team from the National Board of Boiler and Pressure Vessel Inspectors had conducted an inspection at Marble Hill and found numerous violations of the ASME Code. As a result of the National Board's inspection and Region III's findings, a special team inspection was conducted which showed that problems in the Quality Assurance/Quality Control (QA/QC) program in concrete construction activities extended to other construction areas as well.

The licensee issued a Stop Work Order on August 7, 1979, for all safety related construction. An order confirming this suspension of construction was issued by the NRC on August 15, 1979. Subsequently an augmented inspection program was initiated by the NRC, and on December 3, 1979, a full-time NRC Senior Resident Inspector was assigned to the Marble Hill site.

QUESTION 28 (Part 1).

On January 7, 1980, the ASME issued the licensee an "interim letter" of authorization which approved company procedures for meeting the ASME Code.

On February 28, 1980, the licensee submitted their formal reply to the Order, detailing their efforts to upgrade and implement a revised QA program. To assure that licensee's corrective actions were properly and effectively implemented, the Commission approved a five-step plan for gradual rescission of the order. The plan included various hold points which were subject to intensive reviews by the NRC.

One major concern of the NRC's was the apparent low number of qualified QA and management personnel at the site. This concern was addressed by the licensee with an accelerated hiring and training program and a shifting of personnel to the plant site. Currently the entire Nuclear Division is at the site.

Two outside consultants were also retained by the NRC to provide an independent analysis of the concrete work. A third engineer, representing Save-the-Valley, a Madison, Indiana, public interest group, accompanied the NRC consultants during their review at the site.

After the licensee restructured their QA and Construction Management Programs, they were permitted on July 7, 1980, to resume receipt inspections of materials at the construction site, and later contractors were also permitted to resume receipt inspections. On September 12, 1980, the licensee submitted the results of their Construction and Material Verification Program to the NRC.

On December 5, 1980, the NRC permitted limited electrical work and pipe installation to resume by Cherne Contracting Company, the piping contractor and Commonwealth-Lord, the electrical contractor. On January 13, 1981, the licensee received an "N" certificate from ASME. Then on March 27, 1981, the licensee was authorized to resume all remaining safety-related work, including concrete placement. The additional work authorization included concrete repair and placement, structural steel installation and protective coatings. In addition to new concrete work, the licensee's contractors began removing and replacing all patches previously made to repair surface defects in the concrete.

An NRC review of tests and examinations concluded that the existing in-place concrete work was structurally sound. This determination was based, among other things, on tests performed by PSI contractors and observed by NRC personnel. The NRC's independent consultants also concluded that the quality of the concrete at Marble Hill was acceptable.

A special inspection conducted by Region III in September 1981 concluded that the licensee had adequately implemented its commitments made in response to the August 15, 1979 Order Confirming Suspension of Construction and the related conventions and agreements in accordance with the NRC document entitled, "Graduated Recission of Order Dated August 15, 1979." On February 12, 1982, the NRC issued the final rescission of the Order to the licensee.

QUESTION 28 (Part 1).

During the period April to June 1982, the licensee and the electrical contractor, Commonwealth-Lord Joint Venture (CLJV), both identified numerous quality problems involving electrical safety related activities. As a result of these problems, the electrical contractor imposed a Stop Work on these activities effective June 4, 1982. Problems identified included, for example, workers not following procedures and work proceeding without travelers (work instructions). The NRC Senior Resident Inspector reviewed the Stop Work Order and corrective actions which were being taken and found these actions to be adequate. During the period June to October 1982, the electrical contractor made extensive revisions to his overall QA program. Inspection by a Region III Electrical Inspector in September 1982 revealed no problems with traveler control or material traceability.

On January 21, 1983, Region III received allegations regarding the electrical contractor. The allegations concerned loss of material traceability, improper processing of nonconformance reports and altering of travelers (work instructions). The alleger also stated that the licensee failed to submit a required Construction Deficiency Report, and that the alleger was fired because he had written nonconformance reports on the above concerns.

On January 24-28, 1982, an NRC special inspection was conducted, confirming, in part, the allegations. Five items of noncompliance with 10 CFR 50 Appendix B were identified. These items involved failure to follow procedures; no actual hardware problems were found. The licensee issued a Stop Work Order to the electrical contractor on January 28, 1983, and Region III issued a Confirmation of Action Letter (CAL) to the licensee on February 2, 1983. On February 2-11, 1983, the licensee conducted an in-depth audit of the electrical contractor's quality program, and on February 11, 1983, the licensee issued a Construction Deficiency Report based on their audit findings.

Management meetings and inspections are currently underway to assure the adequacy of licensee corrective actions.

QUESTION 28 (Part 2). Is the Commission satisfied that the licensee's Quality Assurance program is now operating satisfactorily?

ANSWER.

Yes. Region III's Systemmatic Assessment of Licensee Performance (SALP) Report for the period October 1, 1981 through September 30, 1982, concludes that the licensee's regulatory performance ranks as one of the best for a construction project within Region III. Although problems were recently identified in the electrical area, the NRC continues to have confidence that the quality assurance program at Marble Hill is sound, and would have identified these problems in time. The identified problems were isolated to some

QUESTION 28 (Part 2).

activities of one contractor. The licensee has a positive philosophy regarding quality assurance. They have been responsive to NRC concerns as well as to the deficiencies identified by their own quality assurance program. During the past five years, staffing levels of the licensee's quality assurance organization have increased significantly.

QUESTION 28 (Part 3). In light of recent concerns with quality assurance at the Zimmer and Midland plants, does the Commission feel that sufficient resources are being devoted to each of these plants in this one region?

ANSWER.

Experience at Region III over the last two years has shown that there have not been enough inspectors to fully carry out, in a timely manner, the routine inspection procedures at all of the construction sites in the region. This resulted from having to divert much of the construction inspection resources to deal with the wide-spread construction and quality assurance deficiencies alleged at the Zimmer and Midland sites. The Region is taking actions to increase the resources to perform the normal inspection program in a timely manner. Specifically, a second Resident Inspector is now being assigned at Marble Hill, four DOE inspectors are under contract to assist in inspection efforts at Zimmer and Midland, assistance is being obtained from one of the other NRC Regional Offices to perform routine inspections at construction sites, and recruiting efforts for authorized staffing positions have increased. In any event, sufficient resources will be applied at each facility prior to the completion of construction and testing so that the NRC will have reasonable assurance that the plant has been built properly and can be operated safely before an Operating License is granted.

QUESTION 29. How many new nuclear power plants do you project will come on-line over the next five years? How many new construction permits do you expect to issue over the next five years? How many new applications for construction permits do you expect over the next five years? When do you expect to receive the next application for a construction permit?

ANSWER.

In FY 1983 through FY 1987 the Commission expects that it will issue 30 to 40 operating licenses to new nuclear power plants and three construction permits. A slightly smaller number will come on-line, since it takes time to load fuel and perform startup tests prior to receiving a full power licenses.

Energy projections by other agencies (Ref. 1.2.3) imply that additional power generating capacity may be needed on a schedule which could result in nuclear plant orders in the 1990's. However, the Commission is not aware of any pending plans for a request for a construction permit.

(1) DOE/PE-0029/1 Energy Projections to the Year 2000, July 1982 Update, Published August 1982.

(2) Regional Electric Reliability Council Reports to DOE, April 1, 1982.

(3) "12th Annual Review," North American Electric Reliability Council, August 1982.

QUESTION 30. We understand the Commission intends to publish proposed amendments to 10 CFR Part 110 that will limit the definition of "utilization facility" to 1) a complete plant; 2) the reactor vessel; and 3) the fuel loading or discharging machine for on-line reactors. It will exempt other components from the full-scope safeguards requirements of the Nuclear Non-Proliferation Act. And, for selected countries, it will permit these components to be exported under a general license. This proposal seems to contravene Congressional intent to make full-scope safeguards the cornerstone of U.S. non-proliferation policy. Why has the Commission attempted to nullify Congressional intent by regulation? In light of recent experience with surreptitious exports of significant components for reprocessing plants, and of the ease of subsequent retransfers from a recipient country, shouldn't the NRC instead broaden the categories of significant components that will trigger full-scope safeguards and specific license requirements?

The proposed rule would apparently give the same favorable treatment to Spain, France, and the People's Republic of China--countries that have not signed the Nonproliferation Treaty--as it would give to treaty signatories. Please explain this decision. Should the NRC be making these distinctions between countries?

ANSWER

The Commission's proposed amendments to 10 CFR Part 110 would not undermine the commitment of the U.S. Government to full-scope safeguards, nor, in our judgment, nullify Congress' intent in this matter. The proposed amendments are designed to simplify the licensing requirements for the export of certain nuclear equipment and material which do not have proliferation significance. These changes include permitting the export--under general license--of NRC-licensed nuclear reactor components to a small group of countries which share U.S. proliferation goals and have given the U.S. written assurances that the components exported will meet U.S. statutory requirements. Congress, in passing the Nuclear Non-Proliferation Act of 1978 (NNPA) specifically recognized that nuclear reactor components were not required to be subject to the licensing criteria of Sections 127 and 128 (the full-scope safeguards criterion) of the Atomic Energy Act. Instead, the provisions of Section 109 were established and made applicable to component exports, requiring application of IAEA safeguards, no nuclear explosive use, and no retransfer without U.S. approval. In proposing the revised utilization facility definition, the Commission has concluded that there is no basis for differentiating between primary coolant pumps and control rods and a wide range of other major reactor components. Rather than arbitrarily define all such major reactor components as utilization facilities, it is the Commission's judgment that only complete pressure vessels and on-load fuel charging machines are significant enough to warrant facility export licensing controls. The Commission is also satisfied that the licensing criteria in Section 109 are adequate to provide for controls over component exports. In addition, a review of past NRC component licensing history discloses that, with only a very few exceptions, no reactor component exports have been approved to non-nuclear weapons states not having full-scope safeguards.

QUESTION 30.

With regard to the proposed component general license, the Commission believes that such a license would not increase the likelihood of export control violations for the following reasons:

(1) The countries proposed for inclusion as authorized recipients of components under the new general license in 110.26 are all countries with good non-proliferation credentials that would likely have little difficulty in meeting the licensing criteria for facility exports. Thus, there would be little incentive to attempt to avoid facility licensing requirements by shipping components separately and risking a violation of NRC's export licensing requirements. Such countries would also be unlikely to allow themselves to be used as a conduit for the reexport of U.S. origin components to third countries.

(2) Any attempt to construct a reactor abroad using U.S.-origin components would be a major effort that should be readily detected by existing means available to the U.S. Government, including intelligence sources.

(3) The only U.S. exporters with a capacity to export a complete facility through separate component exports would be one of the major vendors, such as General Electric or Westinghouse, and it is highly unlikely that such firms would risk jeopardizing their reputation and position with regard to the U.S. Government by attempting to violate the provisions of Part 110.

(4) Under existing procedures, with respect to those countries proposed for the new component general license, it is impractical to maintain a detailed accounting of the thousands of individual components shipped abroad pursuant to specific NRC export licenses. The proposed general license would, accordingly, not reduce the NRC's ability to track component exports since such an ability does not realistically exist under either licensing means, and also would not affect the U.S. Customs service's already limited ability to physically verify the statements by exporters on the individual export declarations. (To detect violations of either a specific or general license the Commission must instead rely primarily on outside sources of information, including intelligence information.)

Finally, you have inquired about the rationale for determining which countries would qualify for favorable general licensing treatment under the proposed Part 110 amendments. The basic criterion for such favorable treatment is NPT adherence or, alternatively, agreement to apply full-scope safeguards. Spain, while not an NPT signatory, has agreed to accept full-scope safeguards France and China, as a nuclear weapons state, is not required under the NNPA to have full-scope safeguards. Accordingly, NRC, with State Department concurrence, concluded that the lack of NPT adherence did not warrant treating these countries in the same category as such other non-NPT states such as Pakistan, Israel and South Africa. On the other hand, some NPT countries (i.e., Iran, Iraq, Syria and Libya) have nevertheless not been proposed for

QUESTION 30.

favorable general licensing treatment. We recognize that making such distinctions is a very sensitive foreign policy matter and have, of course, coordinated these proposed Part 110 changes with the Executive Branch.

Additional views of Commissioner Gilinsky are attached.

QUESTION 30 Additional Views of Commissioner Gilinsky:

The Commission's proposal to limit the definition of "utilization facility" is no less than an attempt to nullify Congress' decision that full-scope safeguards should be a condition of significant nuclear exports from the United States. This change is tantamount to telling the small number of countries which have, for the last ten years, refused to accept international inspection of all their nuclear facilities that the United States is not really serious about trying to prevent the spread of nuclear weapons. Instead of limiting the definition of "utilization facility", the Commission should be considering whether this definition, and the definition of "production facility", should be expanded.

The proposed general license for the export to fifteen specified countries of all reactor components except pressure vessels and fuel loading machines would make it more difficult for the United States to prevent the illicit export of nuclear materials and to exercise its right of prior approval over retransfers of exported components. Instead of enforcing U.S. export controls, the Commission, it seems, would prefer to rely on the efforts of other countries.

The NRC should not be publishing the lists of countries which appear in the proposed amendments to Part 110.

QUESTION 31. Why did NRC's licensing and staff reviews not discover earlier the quality assurance failures at Diablo Canyon, South Texas, Zimmer, Marble Hill, and Midland?

ANSWER.

The quality problems that have been identified in the past few years at the five reactor sites listed in Question 31 have raised questions about the quality of the licensee's design and construction capabilities and performance and the effectiveness of NRC's licensing reviews and inspection and enforcement programs. While the licensee has the total responsibility for the design, construction, and operation of the nuclear power plant in accordance with applicable standards, regulations, and licensing commitments, the NRC has the responsibility to ensure that the licensee fulfills its responsibilities to design and construct a nuclear power plant that can be operated in a manner consistent with public safety. It is in this NRC oversight responsibility that shortcomings in the NRC programs have become evident.

In an August 1982 paper to the Commission, the staff attributed some of the shortcomings in the NRC programs to NRC's not sufficiently examining project management controls at sites under construction and NRC's not addressing design quality as specifically and extensively as other areas.

NRC has underway several initiatives to improve NRC QA programs with respect to these identified causes, and to probe deeper into NRC and licensee QA programs for further underlying causes of quality problems in the design and construction of nuclear plants. NRC's QA initiatives may be grouped into four categories: (1) near term actions affecting licensees nearing the operating license issuance stage; (2) intermediate term actions affecting the routine inspection program; (3) longer term actions affecting NRC's future policy and programs; and (4) NRC organizational actions affecting NRC's QA program. Initiatives in category (1) are oriented toward confirmation of the quality of licensee construction activities. Initiatives in categories (2) and (4) represent improvements in NRC's programs. Initiatives in category (3) are oriented toward better understanding the root causes of past problems and developing further improvements to both NRC and licensee QA programs.

(1) Measures to enhance quality and the assurance of quality for licensees nearing the operating license issuance stage have included: (a) an NRC requested licensee evaluation of the effectiveness of the QA program for the design and construction of the facility and a certification that the facility has been designed, constructed and tested in accordance with the FSAR and other licensee commitments; (b) an expanded evaluation and retrospective review of the licensee's construction performance, including quality of performance, performed by NRC regional inspection staff on each applicant for an operating license prior to license issuance; (c) on a case by case basis, NRC may request applicants for an operating license to have an independent design review and verification conducted for specific structures, systems, or components.

QUESTION 31.

(2) Intermediate term actions affecting the NRC inspection program include: (a) revision of inspection procedures to focus more on the areas of highest inspection priority; (b) an increase in the inspection man-power allocated to each plant under construction; (c) construction appraisal team (CAT) inspections on selected plants which supplement the routine single inspector oriented program and provide a more comprehensive, indepth look at a licensee's construction performance, particularly with respect to hardware; (d) development of a new inspection procedure (Integrated Design Inspection) to provide an indepth examination, on selected plants of the design, engineering, and design control programs for a nuclear construction project; and (e) the development of a computerized capability to analyze construction event reports.

(3) Longer term actions affecting NRC's future policy and programs are princi-pally focused on the Congressional requirements for quality assurance studies and pilot programs contained in Section 13 of NRC's Authorization Act for 1983. The report and recommendations from the study are due to Congress in the Spring of 1984. These studies examine past quality or quality assurance problems in the nuclear industry and lessons learned from them, successful quality programs in the nuclear industry and the contrasts between them and less than successful programs, quality programs outside the U.S. nuclear industry, and other alternative programs and approaches to quality and the assurance of quality.

(4) Organizational changes within the NRC include the consolidation of all headquarters components having QA programmatic responsibility into a single unit in the Office of Inspection and Enforcement (OIE). The new OIE Quality Assurance Branch has agency responsibility for QA licensing, QA research and standards development, QA inspection program development and appraisal, and for NRC's QA initiatives.

Additional views of Chairman Palladino and Commissioner Gilinsky are attached.

QUESTION 31. Additional views of Chairman Palladino

Chairman Palladino adds that the meaning of certification is not clear. NRC actions on QA programs should be and are limited to approval or disapproval. However, we should be careful that we keep our sights on having an effective QA program and not try to micro manage the construction program.

QUESTION 31 Additional Views of Commissioner Gilinsky:

My own view is that the QA program for a particular category of construction should be certified by the NRC before construction begins on that category of plant or equipment. We do not now adequately check in advance to determine if a proper QA program is actually in place before a particular phase of construction begins.

QUESTION 32. Please describe your efforts to implement the pilot program required in the NRC authorization bill for FY 82 and 83, to test improvements in the NRC's quality assurance/quality control (QA/QC) program?

What additional steps must the NRC take to fully implement the program? When do you expect the program to be fully implemented? Which plants will be included in the program?

ANSWER.

The NRC Authorization Act (Public Law 97-415) directs the NRC to (1) conduct a study of existing and alternative methods for improving the quality of construction ot nuclear power plants, (2) conduct a pilot program to test selected alternative programs and concepts, and (3) provide a report to Congress in April 1984 on the results of the study and pilot program and on the Commission recommendations for actions to improve the quality of construction of nuclear power plants. The following paragraphs provide a synopsis of the staff's criteria, schedules, and plans for carrying out the pilot program as required by the Authorization Act.

The first step in the site selection process for the pilot program is to identify the alternative programs to be tested. Section 13(b) of the Authorization Act directs the NRC to conduct special studies of existing and alternative quality assurance programs. The staff is in the process of evaluating which existing programs could be examined in the pilot studies and what new programs might need to be initiated. General criteria for the selection of pilot sites include to the extent possible:

1. Sites which have qualifying programs already underway or which have in the past conducted such programs.

2. Sites such that conduct of the pilot program will have minimal disruptive impact on ongoing construction activities.

3. Sites whose owners will participate willingly in the pilot program. The legislative provision in Section 13 which allows the NRC to order participation would be used only if necessary.

4. Sites with different architect-engineer, constructor, and project management arrangements. Testing the pilot programs with a variety of participants should give a better indication of the efficacy of a given alternative.

The site selection process must also, of course, respond to the criteria identified in Section 13(c) of the Authorization Act ; namely, the pilot program must include one site at which quality assurance and quality control programs have operated satisfactorily, and two sites with remedial programs underway at which major construction, quality assurance, or quality control deficiencies have been discovered in the past.

QUESTION 32.

With regard to the kinds of alternative programs to be tested in the pilot program, the Authorization Act requires us, as a minimum, to test the alternative program described in Section 13(b)(5), which involves the use of independent inspectors to audit the quality assurance program. The NRC staff is presently in the process of identifying past, ongoing, or planned audit programs that qualify under this alternative. Independent inspectors conducting the audits need to have requisite experience and independence, and their audit techniques and results will be reviewed and evaluated by NRC staff.

We hope also to test, as part of the pilot program, alternatives given in Sections 13(b)(3) and 13(b)(4) of the legislation. Section 13(b)(3) calls for evaluations or appraisals by associations of professionals with appropriate expertise. The Institute for Nuclear Power Operations (INPO) plans to extend their construction evaluation program, initiated last year, into a second phase this year in which teams under the direction of INPO will audit a number of construction sites. NRC plans to monitor and evaluate the INPO evaluations as one aspect of the Section 13(b) (3) alternative.

Section 13(b)(4) calls for improvement of NRC's organization, methods and programs for quality assurance (QA) development, review and inspection. NRC has merged all our headquarters' quality assurance functions within the Office of Inspection and Enforcement, resulting in a more unified QA program. To provide a broad perspective for improving NRC's QA program, policies, and practices, a review and comparison is being conducted of the QA programs of NRC, other government agencies and industries, and the nuclear industry in other countries. In addition, we are developing two new inspection methods, Construction Appraisal Team (CAT) inspections and Integrated Design Inspections (IDI), both of which appear quite promising as a means of auditing industry efforts to improve confidence in the quality of construction and design of nuclear power plants. So far in FY 1983, two CAT inspections (Bellefonte and Comanche Peak) have been completed, and one IDI (Callaway) has been completed.

The staff has also begun to study and evaluate the alternative program concepts described in Section 13(b)(1) (more prescriptive approach for defining principal architectual and engineering criteria) and in Section 13(b)(2) (conditioning the construction permit on the licensee's demonstration of an effective QA capability). At the present time these concepts are less amenable to testing through a pilot program than are alternatives in Sections 13(b)(3), (4), and (5).

With regard to the Authorization Act requirement that NRC study existing quality assurance programs, a series of case studies at representative sites are being conducted to determine the essential constituents of successful and less than successful programs. The case study approach is diagnostic in nature, focusing on project and contract management of the utility.

QUESTION 32.

Section 13(b) of the Act requires us to obtain comments of the public, licensees, the Advisory Committee on Reactor Safeguards, and organizations of professionals having expertise in appropriate fields. NRC published, in the March 3, 1983 Federal Register, a notice requesting public comment on methods of improving the quality of nuclear power plant construction in general, and on the Ford Amendment in particular. Copies of this notice are being sent to licensees and to organizations of professionals, specifically seeking their input. The staff plans to brief the ACRS on its Ford Amendment efforts in the near future.

Given the limited time frame for conducting the various aspects of the pilot programs as discussed above and reporting on the program results to Congress, the NRC staff expects to select in the near future the pilot sites and programs so that the programs can be evaluated for a long enough period to allow meaningful analysis. Public Service of Indiana (Marble Hill site) has agreed to cooperate as one of the sites in the pilot programs. The staff expects to have selected other pilot program sites and alternative programs for testing no later than May 1, 1983.

QUESTION 33. (a) Given the apparent increase in failures of QA/QC programs at several plants under construction, do you think the current regulatory approach of allowing licensees in effect to "police" themselves to assure the quality of construction requires revision? Please explain.

ANSWER.

The complexity and extent of problems that have been identified in the past few years at several plants under construction have raised questions concerning the quality of the licensee's design and construction of nuclear power plants and the NRC's programs for review and inspection. As indicated in the answer to Question 31, a number of initiatives are underway to review and revise the NRC regulatory approach and programs for assuring the quality of licensee performance. The licensee has the ultimate responsibility for the design, construction, and operation of the nuclear power plant in accordance with applicable standards, regulations, and licensing commitments. In meeting this responsibility, the licensee must have an adequate QA/QC program to "police" themselves and assure that they are fulfilling their responsibility. The NRC in turn, has the responsibility to review and inspect the licensee to ensure that the licensee does in fact have an adequate QA/QC program to assure the quality of plant construction. In this sense, the concept of licensee's "policing" themselves is a fundamental and primary responsibility of the licensee.

QUESTION 33. (b) Do you think a conflict of interest exists when a licensee who has an incentive to minimize front-end costs by cutting corners during construction, also has a responsibility to assure the quality of construction, which could increase front-end costs? Please explain.

ANSWER.

Most licensees subject to NRC regulation are in the private sector. One of their motivations is to produce revenues and profits.

Most licensees should realize, however, that preventing delays in licensing and ensuring safe operation are to their financial interest. They should recognize that delays in start-up, shut-downs after start-up, and worst of all, recovery from an accident can be financially disasterous. As such, there should be a strong motive for proper construction. NRC's role in protecting public health and safety is promulgated through NRC regulation. NRC regulations permit the licensee to elect the most cost-effective approach which complies with the NRC requirement. In this sense, the licensee does have the incentive to minimize costs in achieving compliance but not at the sake of, or expense of, compliance with NRC regulations. The NRC responsibility is to ensure that this incentive to the licensee does not result in "cutting corners" and noncompliance. The licensee must realize that failure to comply with NRC regulations may result in civil penalties or failure to obtain an NRC license. These NRC actions directly impact the licensee's revenue and profits. A primary objective of the NRC is to ensure that there is adequate incentive for licensees to comply with NRC requirements.

QUESTION 33. (c) Will the QA/QC pilot program under development by the NRC answer these questions fully?

ANSWER.

The pilot program cannot be the panacea for all of the construction quality problems of the nuclear industry. However, the pilot program will address and provide an evaluation of alternative approaches to identify and correct many of the problems of the type that have occurred at nuclear plants under construction.

The information obtained in the pilot program test of alternative programs and concepts should aid in identifying methods of improving and assuring the quality of nuclear power plant construction.

QUESTION 34. I believe that any Congressional review of proposals to reform the NRC licensing process should also include a review of the Price-Anderson Act, which imposes important conditions upon the licensee. When will the NRC complete a draft of its report on continuing or modifying the Price-Anderson Act, required to be submitted to the Congress by August 1, 1983? How much sooner than the August 1, 1983, deadline can the NRC complete, and transmit to the Congress, a final report?

ANSWER.

The staff expects to complete its draft of the Price-Anderson report in May. The report will cover many different issues pertaining to the need to continue or modify the Price-Anderson Act and two months may well be consumed by the Commission review, coupled with the necessary time for printing the report in final form. However, the Commission will strive to submit the report to Congress before the legislatively-mandated date of August 1, 1983.

QUESTION 35. The "Ray Miller Case" raises disturbing questions about the adequacy of NRC's authority over suppliers of materials and equipment to nuclear powerplants. Please recommend steps the NRC, or the Congress, should take to improve the NRC's ability to assure that materials and equipment used in nuclear powerplants meet NRC requirements. Should the QA/QC pilot program be amended to include suppliers?

ANSWER.

Our March 10, 1983 correspondence to you included a response to your previous Question 8 (copy attached) which listed the actions the Commission has or is planning to take to prevent the recurrence of incidents such as the Ray Miller, Inc., case. That response also addresses the Commission's views on whether existing statutory authority is sufficient to address such cases effectively and advised you of our recommendations for developing legislative amendment to Section 206 of the Energy Reorganization Act of 1974. It is our current belief that a clarification of the Commission's inspection and enforcement authority under Section 206 may be desirable to increase the NRC's ability to ensure that nuclear suppliers of materials and equipment used in nuclear power plants meet NRC requirements. As noted in the attachment, the Commission has taken and is planning a number of actions to prevent the recurrence of incidents such as the Ray Miller, Inc., case. Our review of the results of these actions may result in additional recommendations for amendments to current legislation and NRC regulations pertaining to 10CFR 21 or 10CFR 50, Appendix B. Should this be the case, you will be advised.

NRC quality assurance requirements extend to suppliers, who are not licensees, through the contract and procurement process between licensees and their contractors and subcontractors. In order to better understand how quality requirements are presently imposed on architect-engineers and suppliers by licensees and how these requirements and their implementation might be improved, the NRC staff is conducting a review of the contract and procurement process employed by licensees of nuclear power plants under construction. The purpose of the study is to examine how licensee responsibilities for quality control and quality assurance are delegated, managed, and controlled by the licensee in the contract and procurement process and to ascertain what improvements may or should be made in this area. This effort will be complemented by review of outside,

QUESTION 35

non-nuclear industry practice. The study will be used by the NRC in analyzing quality assurance program alternatives and in assessing and preparing NRC recommendations for the report required to be submitted to the Congress in April 1984.

Because suppliers are not NRC licensees and in view of the ongoing staff efforts described above to address the question of supplier product quality via the contracting and procurement process, we conclude that the QA/QC pilot programs need not directly include suppliers.

ATTACHMENT TO QUESTION 35

QUESTION 8. What steps has the Commission taken to prevent the recurrence of incidents such as the recent "Ray Miller Case?" Is existing statutory authority sufficient, in the Commission's judgment, to enable the Commission to address this type of case effectively?

ANSWER.

The Commission has taken and is planning a number of actions to prevent the recurrence of incidents such as the Ray Miller, Inc. case. These actions include the following:

a. The Commission has alerted all holders of a nuclear power reactor or fuel facility operating license or construction permit of the potentially significant problem pertaining to fraudulent products that may have been sold to nuclear industry companies by Ray Miller, Inc. This notification was made by IE Information Notice No. 83-01 and was issued on January 26, 1983. Additionally, a letter was sent on the same date to the chief executive officer of each utility that holds a construction permit or operating license for a nuclear power plant. The letter addressed quality assurance programs in general and included information about unapproved fittings provided by Tube Line Corporation as well as the fraudulent practices of Ray Miller, Inc.

b. The Commission is planning to require specific actions on the part of licensees that have received suspect materials from suppliers. These actions will be specified and imposed through the issuance of an IE Bulletin.

   The actions identified in (a) and (b) will emphasize to the industry the need for adequate quality assurance programs which cover both American Society of Mechanical Engineers (ASME) code and non-code suppliers. Ray Miller, Inc. was a non-code supplier, i.e., did not hold a code certification.

c. The Commission is currently conducting investigations and reactive inspections of a number of material suppliers. These activities were initiated as a result of material deficiencies that were identified through licensee and vendor quality assurance programs.

d. Applicable industry codes and standards are currently being reviewed to determine whether changes should be recommended in light of recent problems with material suppliers.

e. Based on evaluation of the findings resulting from current investigations and reactive inspections of material suppliers, the Commission will review whether changes to NRC Regulations, applicable to licensees, are needed.

f. A procedure for routine NRC inspection of a sample of material suppliers such as Ray Miller, Inc. will be developed for implementation.

In addition, the Nuclear Regulatory Commission (NRC) and the Federal Bureau of Investigation (FBI) have a formal Memorandum of Understanding (MOU) which deals with, among other things, the exchange of information relating to threats, theft, or sabotage pertaining to the U.S. nuclear industry. Complementing this MOU is overall FBI policy which dictates that vital and important information received by the FBI, either through investigation or otherwise, is to be disseminated to justifiably entitled Government agencies. The FBI is not permitted to disseminate information occurring before a Federal grand jury, it is the responsibility of the appropriate U.S. Attorney's office to seek court release of the information to NRC. In all of these situations, NRC relies on the ability of the Department of Justice (DOJ) and the FBI to recognize potential public health and safety issues which necessitate referral to NRC. Disseminated information confidential to the FBI and/or DOJ, is most often protected by the deletion of identifying data and/or the use of paraphrasing.

The Chairman of the NRC and the Director of the FBI have discussed this matter. The staffs of both agencies will consider the need to revise our MOU to help ensure that information discovered in FBI investigations that is significant to the NRC regulatory mission is promptly brought to our attention. We will also look into the need to develop similar procedures for interacting with the Department of Justice with regard to matters under Grand Jury consideration.

In regards to the question of whether existing statutory authority is sufficient, we submit the following:

a. The statutory authority that currently exists is sufficient for regulating licensee's quality assurance programs and activities. However, most material suppliers, such as Ray Miller, Inc., are not NRC licensees. Under existing statutory authority, the Commission has imposed 10 CFR 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants. Under these regulations, each licensee is required to establish and implement a quality assurance program which satisfies the criteria of 10 CFR 50, Appendix B. The licensee is required to retain responsibility for any part of the quality assurance program delegated to a contractor or vendor, such as Ray Miller, Inc. Where such delegation occurs, the licensee is required to include applicable requirements of his quality assurance program in the work procurement document. This would include provisions to assure that vendor or contractor purchased items also conform to the appropriate requirements.

b. The Commission has promulgated 10 CFR Part 21 "Reporting of Defects and Noncompliance" under the authority of section 206 of the Energy Reorganization Act of 1974 for the purpose of being notified about certain defects and noncompliances. However, experience has shown that amendments to section 206 may be desirable to enhance the Commission's authority in this area. It may also be desirable to clarify the authority to inspect a nonlicensee involved in the manufacturing of certain components for licensed facilities. Recommendations are currently being developed for these amendments. At the same time it should be recognized as stated in paragraph (a) that licensees are responsible for the quality of components in their facilities.

ADDITIONAL VIEWS:

Commissioner Asselstine notes that the Commission's present authority to adopt requirements governing the work of nuclear suppliers such as Ray Miller, Inc., and to take enforcement actions against such firms for violations of those requirements, may be quite limited. He believes that the limits on the Commission's present authority might hinder the Commission's ability to take all the actions that may be needed to prevent the recurrence of incidents such as the Ray Miller, Inc. case. He notes that our General Counsel is now preparing an analysis of the Commission's existing authority and the need for additional statutory authority in this area.

QUESTION 36. In view of the long time it takes for the NRC to complete its investigations, (e.g. allegations about the Zimmer plant and about cheating by operators at Three Mile Island on certification tests), should the NRC increase its investigations staff above the proposal in its budget request for FY 84 and 85?

ANSWER.

The Commission realizes that OI sometimes conducts investigations involving very complex issues which are resource intensive and time consuming.

The Commission believes that the addition of resources to OI would enable investigations to be completed more expeditiously. The Commission will monitor OI and will consider the need to increase OI resources from within the FY84/85 budget proposal.

QUESTION 37. Please describe, in detail, NRC's past and proposed actions under the Systematic Safety Evaluation Program (SEP). How will the NRC use the information it will receive from the SEP? What implications might this information have for NRC's safety policies, and particulary for changes in backfitting rules?

ANSWER.

The SEP review consisted of a determination of differences from current licensing criteria for selected issues and then a plant-specific evaluation for ten plants of the need for any corrective actions to resolve those differences in an "integrated assessment" (see response to Question 12). The corrective actions identified thus far under SEP are described in detail in the Integrated Plant Safety Assessment Reports for each plant (NUREG-0820, 0821, 0822, 0823, 0824, 0825, and 0826). The proposed corrective actions include hardware modifications, procedural modifications, and further analyses to determine whether additional corrective actions are warranted. For the plants for which the review is complete, the NRC staff and the licensees have agreed that the proposed corrective actions are appropriate.

As described in the Integrated Plant Safety Assessment Reports, the results of the SEP evaluation were used to identify safety improvements. Also, for those plants still operating under a Provisional Operating License, the SEP review will serve as a part of the basis for conversion to a Full Term Operating License. For all of the plants reviewed, SEP provides a documented basis to reconfirm the safety of the plant which was established when the plant was originally licensed.

The current licensing criteria applied in the SEP reviews have existing technical bases; the SEP integrated assessment provided an evaluation of the relative safety significance of those criteria given plant-specific considerations. Thus, SEP has not substantially affected policy, rather it provides a vehicle by which the policy can be implemented. The degree to which SEP results may influence policy changes relative to backfitting is still under review.

QUESTION 38. a) What are the NRC's total staff and funding requirements for FY 1984 and FY 1985 to support licensing of the Clinch River Breeder Reactor?

ANSWER.

a) The FY 1984 Budget Request includes 22 FTEs and $8.2 million for FY 1984 and 14 FTEs and $7.8 million in FY 1985 for work related to the Clinch River Breeder Reactor.

QUESTION 38. b) What would the NRC do with these resources if the Congress terminates CRBR?

ANSWER.

b) If the Congress were to terminate the CRBR program, the resources would be applied to work on generic issues, operating reactors licensing actions, and general safety research. Some staff would be redirected to the inspection program and legal functions.

QUESTION 39. How many plants with construction permits do you expect will be (1) cancelled or (2) deferred? How many plants with construction permit applications pending will be (1) cancelled or (2) deferred?

ANSWER.

The NRC does not speculate on plant cancellations or deferrals. Ten plants are currently indefinitely deferred. Three plants are under construction permit review.

QUESTION 40. What is the status of the NRC investigation into the material false statement pertaining to operator cheating on a test at Three Mile Island?

ANSWER.

The NRC Investigation regarding this matter has been completed and the report is under review.

QUESTION 41. Please discuss in detail the NRC's past progress and future plans for resolving generic safety issues. To what extent has the NRC deferred activities in this area to expedite plant licensing? Please discuss what generic safety issues must still be resolved, and provide a timetable for their resolution. What effects would resolution of these issues have on the status and operating costs of existing plants?

ANSWER.

With the resolution of TMI Action Plan Item IV.E.2 "Plan for Early Resolution of Safety Issues," a method of identifying and prioritizing generic safety issues has been developed by the staff and, pending Commission review, is being used to assign priority and resources for the resolution of Unresolved Safety Issues (USIs), TMI Action Plan items, and other generic safety issues. The status of the USIs and other generic safety issues, including the prioritization methodology, are discussed separately below:

UNRESOLVED SAFETY ISSUES

The NRC has continued to make progress in the technical resolution and implementation of USIs. The final technical resolution for two USIs was completed during calendar year 1982. These are A-11, "Reactor Vessel Materials Toughness," and A-39, "Determination of Safety Relief Valve (SRV) Pool Dynamic Loads and Temperature Limits of BWR Containment." USI A-11 provides an improved procedure for performing fracture toughness analyses required by 10 CFR 50, Appendix G. The analysis procedure is an alternative for licensees who are required by Appendix G to perform such analysis. USI A-39 provides an optional method for licensees to obtain credit for higher operational pool temperature limits for BWR containments with quencher devices. It also provides acceptance criteria to determine the hydrodynamic loads for SRV actuation. Neither of these resolutions will impose any backfit costs on existing plants.

Following the steam generator tube rupture at the Ginna PWR (1/25/82), which resulted from a loose part in the secondary system, the NRC initiated a program to develop an overall set of recommendations regarding steam generator tube integrity. USIs A-3, A-4, and A-5, which considered mostly corrosion-related failure mechanisms, have been incorporated in the overall set of recommendations currently under NRR management review. USIs A-3, A-4, and A-5 will be considered technically resolved upon approval and issuance of these recommendations.

A listing of the present schedule for completion of all USIs is provided in the attached Table 1. The table also includes the previous scheduled completion dates for comparative purposes. No new USIs were added to the list in 1982.

QUESTION 41.

An explanation of any delay in the final resolution of each USI indicated in the attached Table 1 is presented in that table under the column headed "Remarks." Additional detail regarding status and reasons for any delay are provided for each USI in the AQUA BOOK published on a quarterly basis. This information for 1982 is available in Volume 4, Numbers 1, 2, 3 and 4 of NUREG-0606, "Unresolved Safety Issues Summary," (AQUA BOOK), all published in 1982.

No work on USIs has been delayed to expedite plant licensing.

The Commission requires the safety value of proposed requirements, including backfitting requirements, to be evaluated and considered in relation to the cost impact that would be involved. These analyses are done in accordance with agency-wide guidance. Updated guidance (NUREG/BR-0058, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission") was issued in January 1983. The analyses are reviewed by the Committee to Review Generic Requirements (CRGR). The Commission considers the value/impact analyses and the CRGR evaluations and recommendations based on the Committee's review in assuring itself that cost effective regulatory actions, consistent with providing the necessary protection of the public health and safety and common defense and security, are made.

OTHER GENERIC SAFETY ISSUES

The status of the generic safety issues and the discussion of the methodology for identifying and prioritizing generic safety issues will be documented in NUREG-0933 (to be published in April 1983).

The primary index used in the prioritization method is the ratio (value/impact score) of the estimated risk reduction potential of the possible solution of an issue (value) to the cost of developing and implementing the solution (impact). Cost estimates include both industry and NRC costs. Risk thresholds established as part of the prioritization methodology are used in conjunction with the value/impact scores to determine the relative safety priority rankings of HIGH, MEDIUM, LOW, and DROP for all safety issues. Issues that were found to be technically resolved and only needed to complete the approval process were also considered to be HIGH priority. Issues that were found to have no direct relation to safety were not prioritized and are identified as either Environmental or Licensing issues. Environmental issues generally have some impact on values protected by NEPA whereas Licensing issues relate to improving the effectiveness or efficiency of the NRC licensing process.

With the formulation of the prioritization methodology, all TMI Action Plan Items (approximately 255) were reevaluated along with other issues that had been identified prior to the start of FY-1982. These other issues include 115 items documented in NUREGs 0371 and 0471 as well as 29 issues that were originated primarily by the Advisory Committee on Reactor Safeguards

QUESTION 41.

(ACRS). In addition, 34 potential new generic issues were identified by the staff during FY-1982 and are currently being evaluated to determine their safety priority rankings. The results of the prioritization of these 433 issues is shown in Table 2.

The basis for the prioritization of all 433 issues is described in NUREG-0933. As a result of the prioritization process, schedules have been developed and resources have been allocated for the resolution of the 52 HIGH priority issues by the end of FY 1986. Initiation of the resolution of the 34 MEDIUM priority generic safety issues has been deferred beyond FY 1983. Because of the relative risk reduction potential of MEDIUM priority generic safety issues, available resources are being utilized to resolve HIGH priority safety issues first. Resources will be appropriately assigned to the 34 new issues after they are prioritized. This process will be applied to all generic safety issues raised in the future. The 36 LOW priority issues have been dropped from further consideration.

The method used for prioritizing generic safety issues takes into consideration, not only the estimated cost of developing and implementing the resolution of the issues, but also the estimated public risk reduction potential of the issues. The resolutions assumed in most cases were, at best, conceptual and final resolutions may differ from these assumed resolutions. As generic safety issues are technically resolved, the NRC procedures previously discussed will be followed in determining the cost effectiveness of the resolutions, including the impact on licensees.

QUESTION 41

TABLE 1 SCHEDULE FOR RESOLUTION OF UNRESOLVED SAFETY ISSUES

Task No.	Unresolved Safety Issue	Previous Schedule for Final Technical Resolution*	Present Schedule for Final Technical Resolution*	Remarks
A-1	Water Hammer	January 1983	December 1983	Delay due to additional time required for value/impact assessment of proposed resolution
A-2	Asymmetric Blowdown Loads	Completed November 1980		
A-3,4,5	PWR Steam Generator Tube Integrity	March 1982	April 1983	Included in overall NRC recommendations developed following Ginna rupture on 1/25/82
A-6	Mark I Short Term Program	Completed December 1977		
A-7	BWR Mark I Pressure Suppression Containment	Completed July 1980		
A-8	BWR Mark II Pressure Suppression Containment	Completed August 1981		
A-39	SRV Pool Dynamic Loads	January 1982	Completed October 1982	
A-9	Anticipated Transient Without Scram	Completed with NUREG-0460 Vol. 4 for comment March 1980		Proposed rules issued November 1981. Final rule under consideration
A-10	BWR Nozzle Cracking	Completed November 1980		
A-11	Reactor Vessel Materials Toughness	January 1982	Completed October 1982	

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*Final Technical Resolution represents the final decision on whether to add new regulatory requirements or modify existing regulatory requirements. Implementation of any requirement would be subsequent to the final technical resolution.

QUESTION 41

TABLE 1 SCHEDULE FOR RESOLUTION OF UNRESOLVED SAFETY ISSUES

Task No.	Unresolved Safety Issue	Previous Schedule for Final Technical Resolution*	Present Schedule for Final Technical Resolution*	Remarks
A-12	Steam Generator and	January 1982	October 1983	Schedule extended to resolve extensive industry comments on draft report. Additional delay was caused by complexity of value/impact assessment of proposed implementation.
A-17	Systems Interaction	N/S	October 1984**	Delayed pending a demonstration of the methodology developed by the NRC.
A-24	Qualification of Class IE Safety-Related Equipment	Completed August 1981		
A-26	Reactor Vessel Pressure Transient Protection	Completed September 1978		
A-31	Residual Heat Removal	Completed 1978		
A-36	Control of Heavy Loads Near Spent Fuel	Completed July 1980		
A-40	Seismic Design Criteria	N/S	July 1984	New schedule reflects adjustment to accommodate CRGR review and public comment of proposed changes to regulatory requirements. Some delay

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*Final Technical Resolution represents the final decision on whether to add new regulator requirements or modify existing regulatory requirements. Implementation of any requirement would be subsequent to the final technical resolution.

**September 1985 if current regulatory requirements must be changed.

QUESTION 41

TABLE 1 SCHEDULE FOR RESOLUTION OF UNRESOLVED SAFETY ISSUES

Task No.	Unresolved Safety Issue	Previous Schedule for Final Technical Resolution*	Present Schedule for Final Technical Resolution*	Remarks
A-40 (continued)				due to difficulty in performing seismic probabalistic risk assessments of proposed resolution.
A-42	Pipe Cracks in Boilding Water Reactors	Completed July 1980		
A-43	Containment Emergency Sump Performance	November 1982	January 1984	Approved by CRGR to issue for public comment
A-44	Station Blackout	March 1983	March 1984	Technical studies completed. Delay in formulating generic resolution due to large variations in plant designs.
A-45	Shutdown Decay Heat Removal Requirements	October 1985	October 1985	Task Action Plan revised. Technical studies underway.
A-46	Seismic Qualification of Equipment in Operating Plants	December 1983	April 1984	Technical work is progressing. Emphasis is being placed on a utility owner's group to collect seismic data on equipment that has survived significant earthquakes. Schedule was adjusted to accommodate utility group input.

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*Final Technical Resolution represents the final decision on whether to add new regulatory requirements or modify existing regulatory requirements. Implementation of any requirement would be subsequent to the final technical resolution.

QUESTION 41

TABLE 1 SCHEDULE FOR RESOLUTION OF UNRESOLVED SAFETY ISSUES

Task No.	Unresolved Safety Issue	Previous Schedule for Final Technical Resolution*	Present Schedule for Final Technical Resolution*	Remarks
A-47	Safety Implications of Control Systems	N/S	March 1985	Task Action Plan approved Studies underway.
A-48	Hydrogen Control Measures and Effects of Hydrogen Burns on Safety Equipment	N/S	June 1985	Task Action Plan approved. USI primarily documents licensing decisions and coordinates research activities.
A-49	Pressurized Thermal Shock	N/S	April 1984	A proposed rule is being developed for Commission consideration. Remainder of program is aimed at developing acceptance criteria for requirements imposed by the rule.

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*Final Technical Resolution represents the final decision on whether to add new regulatory requirements or modify existing regulatory requirements. Implementation of any requirement would be subsequent to the final technical resolution.

Question 41

TABLE 2
SUMMARY OF THE PRIORITIZATION OF ALL NEW GENERIC ISSUES,
TASK ACTION PLAN ITEMS, AND TMI ACTION PLAN ITEMS
(EXCLUDING USIS)

Action Item/ Issue Group	Implementation Required by NUREG-0737	Covered In Other Issues	Resolved	Licensing/ Environmental	High Priority	Medium Priority	Low Priority	Future Prioritization	Total
1. New Generic Issues	-	10	3	0	6	3	7	34	63
2. Task Action Plan Items (Excluding USIs)	-	14	14	57	8	10	12	0	115
3. TMI Action Plan Items									
A. Implementation Required by NUREG-0737	65	-	-	-	-	-	-	-	65
B. Other	-	14	69	28	38	24	17	0	190
Total	65	38	86	85	52	37	36	34	433

QUESTION 42. Recently, the ACRS questioned whether the NRC has properly employed certain methods of quantitative risk analysis in developing its safety goal policy. Do the methodologies and data relied upon by the NRC produce an unrealistically optimistic view of the safety of existing and future plants? Please explain. To what extent should the NRC rely on a safety goal and quantitative risk analysis in its regulatory process?

ANSWER.

The Commission shares your concern over the critical comments that were made regarding the use of probabilistic risk assessments (PRAs) with the Safety Goals. While it is necessary to use PRAs to determine if the quantitative design objectives have been achieved, the Commission recognizes the uncertainties in PRAs resulting from a limited data base and variations in methodologies. In particular, because of the present limitations in the state of the art of quantitatively estimating risks, the Commission has stated that the design objectives are not substitutes for existing regulations.

We do not believe that PRA uncertainties would lead the NRC to an unrealistically optimistic view of the safety of nuclear plants. The uncertainties associated with a PRA could cause the predicted risk to be either optimistic or pessimistic relative to the actual risk. The Commission has decided that the goals are not to be implemented until they have been evaluated during a two-year period. The experience gained during the two-year evaluation period will be used to develop an appropriate implementation plan for the safety goals.

Attached is a copy of the recently published safety goal and implementation plan, which provide a more complete answer to these questions. *

Additional views of Commissioner Gilinsky are attached.

*The attachment has been retained in the committee files.

QUESTION 42 Additional Views of Commissioner Gilinsky:

I did not support the Commission's Policy Statement on Safety Goals. The goals are poorly conceived and there is too much reliance implied on uncertain and unreliable calculational techniques. I am frankly concerned that overly optimistic calculations will be used to rationalize a weakening of the regulatory system.

QUESTION 43. It has been suggested that many of the approved emergency response plans are merely "paper" plans that cannot be effectively implemented. Please provide your own analysis of the effectiveness of approved emergency response plans. Under what circumstances, if any, should the NRC or FEMA accept a utility plan that has not been accepted by the appropriate state and local officials? Can such a plan ever be adequate? What, if any, portion of the cost of implementing a state or local emergency response plan should the licensee be required to bear? Should the NRC impose a cost-sharing requirement as a license condition?

ANSWER.

Following the accident at Three Mile Island Unit 2, the NRC and FEMA engaged in a comprehensive program of upgrading of onsite and offsite emergency preparedness at nuclear power reactors. Guidance criteria and a new rule on emergency planning were developed and issued. Since that time the NRC has reviewed the emergency plans for all operating reactors and conducted a thorough two-week onsite appraisal of emergency preparedness at each facility and FEMA has reviewed all of the supporting State and local plans. The NRC and FEMA have jointly participated in implementing exercises at all operating nuclear power plants which are designed to test the integrated capability of the licensee, local and State planning effort. Each exercise required a significant commitment of resources and involved the participation of a considerable number of personnel from all of the agencies involved. These exercises have demonstrated that emergency response measures to protect the public can be effectively implemented. This has also been demonstrated by the response of State and local agencies and the NRC to an actual emergency which occurred at the Ginna nuclear plant on January 25, 1982 involving a steam generaotr tube rupture.

Licensees and State and local emergency response officials have worked toward correcting any deficiencies identified either during the course of the evaluation of their emergency preparedness program or in the post-exercise critique (each exercise was observed and critiqued by a team of Federal observers). Annual onsite inspections and exercises are the means being used to assure that an acceptable level of emergency preparedness is achieved and maintained at each licensed operating facility.

In deciding whether to permit continued operation when deficiencies are identified, the NRC examines whether the deficiencies are significant for the reactor in question, whether adequate interim compensatory actions have been or will be taken promptly, or whether other compelling reasons exist for reactor operation. In determining the sufficiency of adequate interim compensatory actions, the NRC and FEMA examine State plans, local plans, and licensee plans to determine whether features of one plan can compensate for deficiencies in another plan so that the level of protection for the public health and safety is adequate. A similar determination would have to be made in the event offsite agencies failed to develop an emergency plan and a utility developed plan was not accepted by State and local officials. In particular, the refusal of

QUESTION 43.

offsite officials to accept an emergency plan would have to be examined to determine the actual consequences of such action as it applies to the local response agencies charged with the responsibility of protecting public health and safety in an emergency situation. The current situation concerning the Shoreham plant on Long Island is providing the first such case. At present the issue is before the Licensing Board. The Commission has directed the staff to explore with FEMA the possibility of initiating discussions on this issue among the State of New York, the County, the utility, and the other participants in the proceeding.

There is no regulatory requirement for a licensee to provide funding to support the cost of implementing a State or local emergency response plan. However, some States have enacted laws requiring utilities to fund offsite emergency preparedness programs. Many utilities have voluntarily developed agreements with local agencies for emergency planning assistance including the provision of equipment, facilities and training. In review of the progress made and cooperation shown to date in the development of integrated emergency preparedness programs, the NRC does not believe it is necessary to impose a cost-sharing requirement as a license condition.

Question 44. Please describe in detail the types and amounts of nuclear waste that will be transported along specific routes as a result of enactment of the Nuclear Waste Policy Act of 1982. What steps are the DOT and NRC taking to reduce the hazards of transporting nuclear waste? Please describe steps the DOT and NRC have taken to coordinate with state and local officials the emergency response to transportation accidents.

ANSWER.

Specific routes and details of shipments of spent fuel and high level waste under the Act have not been determined. The Department of Energy will determine the location as well as the amount and rate of shipments under the Act.

Nothing in the Act is to be construed to affect federal, state, or local laws pertaining to the transportation of spent nuclear fuel or high level radioactive waste. To assure continued adequacy of measures required for the public health and safety, the NRC completed a reevaluation of its regulations concerning transportation of radioactive materials. In the course of the reevaluation, the NRC, in 1977, published a final environmental statement designated NUREG-0170, which included an examination of the transportation of radioactive material by all modes of transport. Considering the information developed, the public comments received, and the safety record associated with the transportation of radioactive materials, the NRC determined that its present regulations provide a reasonable degree of safety and that no immediate changes were needed to improve safety. The NRC published a statement to this effect in the Federal Register on April 13, 1981 as part of a public notice closing its rulemaking proceeding announced on June 2, 1975. Nevertheless, the NRC continues to study safety aspects of transportation of radioactive materials to determine where future cost effective improvements for safety should be made.

To assist state and local governments in radiological emergencies, the federal government has established an Interagency Radiological Assistance Plan under the coordination of the Department of Energy. DOE will dispatch a radiological assistance team to an accident scene if federal assistance is needed. An interagency task group jointly chaired by DOT and FEMA, with NRC and DOE participation among others, has prepared a guidance document for use by state and local governments in preparing plans for responding to transportation accidents involving radioactive materials. Thirteen thousand copies of the guidance document are being printed for distribution to state and local governments.

QUESTION 45. Please list and describe past amendments to 10 CFR Part 20. Please discuss any proposed amendments to 10 CFR Part 20, their implications for the public health and safety, and the costs to licensees.

ANSWER.

The chronology of proposed and final amendments to 10 CFR Part 20, Standards for Protection Against Radiation, is shown in Enclosure 1. Currently active items are listed again, separately, in Enclosure 2 with an indication of status and, where appropriate, cost estimates.

Chronology of Part 20 Amendments

Date *	Federal Register Citation	Summary
1/29/57	22 FR 543	Part 20 - Standards for Protection Against Radiation, effective date for entire part.
5/14/57	22 FR 3389	Extension of Reporting Requirements - Minor amendments.
2/21/58	23 FR 1121	Miscellaneous amendments to multiple parts.
7/30/58	23 FR 5721	TREATMENT OR DISPOSAL BY INCINERATION The following amendment is designed to remove an ambiguity in the current regulation and to assure that no licensee shall treat or dispose of any licensed material by incineration without prior Commission approval of his proposed procedures.
12/30/60	25 FR 13952	*10 CFR Part 20—Standards for Protection Against Radiation* The regulation was amended to provide, in effect, that licenses would not be issued to authorize the disposal of radioactive waste material on privately owned land. Under the revised rule, the Commission will not approve any application for a license to receive licensed material from other persons for disposal on land not owned by the Federal Government or by a State Government. The major revision to Part 20, effective January 1, 1961, which was reported in the 1960 Annual Report was further amended in regard to allowable concentration limits for certain mixtures of radionuclides when either the identity or the concentration of any radionuclide in the mixture is not known although it is known that specified radionuclides are not present in the mixture. The revision is more comprehensive and covers all mixtures of radionuclides encountered in licensed operation.
6/22/62	27 FR 5905	The definition of "source material" in 10 CFR Part 20 was amended n June 22, 1962, to bring it into conformity with the definition of "ource material" in 10 CFR Part 40.

*Asterisk beside date indicates an ongoing rule. See next section for more up-to-date information.

Date	Federal Register Citation	Summary
7/3/63	28 FR 6822	On July 3, 1963, an amendment was published which provided for inclusion in the public record of notices of alleged violation issued by the Commission and reports by licensees or holders of authorizations under Part 115, as well as correspondence between the Commission's regulatory staff and licensees or holders of authorizations under Part 115 concerning such reports and notices of alleged violation. The amendments also provided that names of individuals who have received exposure to radiation will not be included in the public record.
10/21/64	29 FR 14434	On October 21, 1964, Part 20 was amended to (*a*) incorporate revised concentration limits, based on Federal Radiation Council recommendations, for radium 226, iodine 131, strontium 89, and strontium 90 that will govern the release by licensees of these radionuclides into unrestricted areas; (*b*) place limitations on the gross quantity of radioactive material released from a licensed activity in specified periods of time; (*c*) require more specific information in support of applications for authority to release concentrations of radioactive material in effluents which exceed Part 20 limits; and (*d*) revise the criteria for approval of proposed limits in excess of Part 20 limits to require an applicant for such approval to demonstrate that he has taken reasonable steps to minimize radioactivity discharged in the effluent streams.
4/8/64	29 FR 4916	On April 8, 1964, a proposed amendment to Part 20 was published which would establish additional requirements for transportation of radioactive materials by AEC licensees and the delivery of materials to carriers by AEC licensees. (This rule apparently never went final.)
11/23/65	30 FR 14551	On November 23, 1965, Part 20 was amended to extend the retention period for records of individual radiation exposure to December 31, 1970, or until a date five years after the individual's employment, whichever is later. The rule became effective December 23, 1965.
12/22/65	30 FR 15801	On December 22, 1965, an amendment to Part 20 was published to revise Appendix B, Concentrations in Air and Water Above Natural Background, as follows: concentration values are added for certain individual radionuclides not presently listed, and generally applicable values are provided for any radionuclide not individually listed. Existing values for occupational exposure to soluble strontium 90 also are revised. The effective date of the amendment is January 21, 1966.

Date	Federal Register Citation	Summary
3/19/66	31 FR 4668	Miscellaneous amendments to Parts 20, 40, 50, 55, 70, 100, 115, 140, and 150 pertain to the addressing of communications, requests, reports, and applications with the AEC and correct certain cross references in the regulations. The amendments were published March 19, 1966, and became effective on publication.
8/5/66	31 FR 10514	An amendment of Part 20 ("Standards for Protection Against Radiation") was published August 5, 1966, effective November 3, 1966, which requires that containers of licensed material be labeled with the radiation caution symbol and legend. The label will identify the radioactive material in the container and provide sufficient information to permit individuals using, handling, or working in the vicinity of the container to take precautions to avoid or minimize exposures to radiation or to radioactive materials.
12/2/66	31 FR 15145	Miscellaneous amendments to Parts 0, 20, 32, 40, 50, and 150 correct certain words and specific references in the regulations to sections of the Atomic Energy Act of 1954 which have been changed by amendments, and make minor editorial changes. The amendments were published December 2, 1966, and became effective on publication.
7/15/67	32 FR 10432	On July 15, 1967, amendments of Parts 2, 20, 150 were published, effective on publication, to reflect changes in the organization and functions of regulatory divisions and to make minor procedural changes. Part 2 concerns "Rules of Practice;" Part 20, "Standards for Protection Against Radiation;" Part 150, "Exemptions and Continued Regulatory Authority in Agreement States under Section 274."
11/4/67	32 FR 15432	*Criteria for the Use of Respiratory Equipment—Part 20* On November 4, 1967, proposed amendments of Part 20 were published for comment which would: (a) permit use of respiratory protective equipment without prior AEC authorization in nonroutine operations where adequate limitation of the inhalation of radioactive materials by use of ventilation or other engineering controls is impractical; (b) establish criteria for respiratory protective equipment programs, and (c) make changes in § 20.103 concerning exposures of individuals to airborne concentrations.
3/30/68	33 FR 5212	On March 30, 1968, amendments of Parts 1 ("Statement of Organization, Delegations, and general Information"), 20 ("Standards for Protection Against Radiation"), and 115 ("Procedures for Review of Certain Nuclear Reactors Exempted from Licensing Requirements") were published, effective on publication, pertaining to corrective and procedural matters and revising addresses and telephone numbers of the Compliance Regional Offices.

Date	Federal Register Citation	Summary
12/19/68	33 FR 18926	On December 19, 1968, amendments to Part 20 ("Standards for Protection Against Radiation") were published, to become effective February 17, 1969, which require four categories of licensees to report to the Commission certain information on radiation exposures to monitored individuals. The reporting requirements apply only to: (a) operators of nuclear power reactors and testing facilities; (b) industrial radiographers; (c) fuel processors, fabricators, or reprocessors who possess more than 5,000 grams of contained uranium 235, uranium 233, or plutonium or any combination thereof; and (d) persons who possess specified quantities of byproduct material for purposes of processing or manufacturing for distribution pursuant to Parts 30, 32, or 33. An annual report will be required setting forth the total number of individuals for whom personnel monitoring was required or provided during the year, and individual exposure information for those individuals who received an annual external dose in excess of the quarterly numerical values specified in § 20.101(a) (e.g., 1.25 rems whole body exposure). A report of each individual's exposure to radiation and radioactive material incurred during the period of employment or work assignment in a licensee's facility, as presently required to be recorded under Part 20, is to be submitted to the Commission, with a copy to the individual concerned, within 30 days after termination of the individual's employment or work assignment.
3/14/69	34 FR 5254	On March 14, 1969, an amendment to Part 20 was published, effective upon publication, which requires four specified categories of licensees to furnish to the AEC and terminated individuals reports of personnel exposure to radiation and radioactive material within 30 days after the exposure of the terminated individual has been determined by the licensee or 90 days after the date of termination of employment or work assignment, whichever is earlier.
5/9/69		Reports of Loss or Theft of Licensed Material.
12/11/69	34 FR 19546	On December 11, 1969, amendments to Parts 1, 2, 20, 30, 36 ("Export and Import of Byproduct Material"), 40, 50, 55 ("Operators' Licenses"), 70 ("Special Nuclear Material"), 71 ("Packaging of Radioactive Material for Transport"), 115, 140, 150, and 170 were published, effective upon publication, pertaining to corrective and procedural matters and modifying certain sections of the regulations which provide for specific exemptions from regulatory requirements.
3/25/70	35 FR 5033	On March 25, 1970, amendments to part 20 ("Standards for Protection Against Radiation") were published, effective April 24, 1970, which specify additional acceptable methods of controlling access to high radiation areas. Alternatives to these control methods may be submitted by licensees for AEC approval.
4/22/70	35 FR 6425	On April 22, 1970, amendments of parts 20, 30, 31, 32 and 35 were published which exempted from licensing small quantities of byproduct material, and certain quantities of byproduct material contained in calibration sources installed in ionizing radiation measuring instruments; revoked a general license in part 31 for similar quantities of byproduct material; and revised appendix C of part 20 to conform quantities listed in appendix C to the exempt quantities. The amendments of parts 20, 30, 32, and 35 became effective on May 22, 1970. The amendment of part 31 was to become effective on October 22, 1970; however, this effective date was extended until determination of a petition for rule making filed by Nuclear Chicago Corp.
9/29/70	35 FR 15067	On September 29, 1970, an amendment to part 20 was published, effective October 29, 1970, which requires licensees to include in a separate part of the report, submitted under § 20.405(c), for each individual exposed, the name, social security number, and date of birth, and an estimate of the individual's exposure. (Published as proposed rule on June 4, 1970.)

Date	Federal Register Citation	Summary
11/26/70	35 FR 18110	On November 20, 1970, an amendment of part 20 was published, effective December 28 which requires licensees to retain indefinitely, or until their disposal is authorized by the Commission: (a) The records of external exposure required to be maintained under § 20.401, and (b) records of bioassays made pursuant to § 20.108.
12/3/70	35 FR 18385	On December 3, 1970, amendments to Parts 20 and 50 were published, effective January 2, 1971, which (a) require AEC licensees to make reasonable efforts to keep exposures to radiation and releases of radioactivity in effluents as low as practicable and (b) specify design objectives and technical specifications on effluents from nuclear power reactors.
1/30/71	36 FR 1466	On January 30, 1971, amendments to Parts 20 ("Standards for Protection Against Radiation") and 30 ("Rules of General Applicability to Licensing of Byproduct Material") were published, effective immediately, which clarified authority of licensees to make transfers of byproduct material and made other minor editorial changes.
4/6/71	36 FR 6521	On April 6, 1971, proposed amendments to Parts 20, 30, 40, 70, and 71 ("Packaging of Radioactive Material for Transport") were published for comment which would impose safety regulations applicable to shippers and carriers of radioactive material not regulated by the Department of Transportation, the U.S. Postal Service, or an Agreement State. The amendments also would impose on AEC licensees packaging requirements for shipments not presently subject to Part 71 and DOT regulations; package marking and labeling requirements for shipments not subject to DOT regulations; requirements to provide opening instructions with each package and to have procedures for opening and closing packages; and all applicable requirements of DOT regulations when transporting licensed material as a carrier not subject to DOT regulations.
8/26/71	36 FR 16894	On August 26, 1971, amendments to Part 2 (and conforming amendments to Parts 20, 30, 40, 50, 55, 70, 71, 73, and 150) were published, effective September 25, 1971, to implement the authority granted the AEC (by legislation enacted in December 1969) to impose civil penalties for violations of licensing regulations, certain sections of the Atomic Energy Act, and license conditions. Under the law, a penalty would not exceed $5,000 for each violation, with a total penalty of $25,000 payable by any person for all violations occurring within 30 consecutive days. A hearing may be requested by a person charged with violation.
8/26/71	36 FR 16898	On August 26, 1971, amendments to Parts 20, 30, and 31 ("General Licenses for Byproduct Material") were published, effective September 25, 1971, which add barium-133, in specified quantities, to the list of exempt byproduct material in Part 30 and made conforming changes to Appendix C of Part 20.
12/4/71	36 FR 23138	On December 4, 1971, an amendment to Part 20 was published, effective January 3, 1972, which provides that licenses for disposal of licensed materials at sea would be issued only if it can be shown that sea disposal is less harmful than alternative methods of disposal.
11/2/72	37 FR 23319	On November 2, 1972, amendments to Appendix B of Part 20 were published, effective immediately, which correct a number of concentrations of radioactive material in air and water above natural background to conform with recommendations of the National Council on Radiation Protection and Measurements (NCRP), and which add listings for platinum-193, thorium-227, and thorium-231.
1/11/73	38 FR 1271	Miscellaneous Amendments—Parts 20, 30, 31, 32, 34, 35, 36, 40, 50, 55, 70, 71, 73, 100, 115, 140, 150 On January 11, 1973, amendments to the AEC regulations were published, effective immediately, to conform references to regulatory units with the major organizational changes of 1972.

Date	Federal Register Citation	Summary
8/17/73	38 FR 22220	**Reports to Employees and Other Individuals—Part 20** On August 17, 1973, amendments to Part 20 were published, effective September 17, 1973 regarding notification and reports to individuals, including persons other than employees, of exposure to radiation or radioactive material.
8/21/73	38 FR 22467	**Definition of "Calendar Quarter"—Part 20** On August 21, 1973, an amendment to Part 20 was published, effective September 20, 1973, which simplifies the definition of "calendar quarter."
10/24/73	38 FR 29314	**Definitions of Units of Radioactivity—Parts 20, 30, and 32** On October 24, 1973, amendments to Parts 20, 30, and 32 were published, effective October 24, 1973, which concern definitions and abbreviations of units of radioactivity.
1/4/74	39 FR 1000	**Personnel Monitoring Reports—Part 20** On January 4, 1974, an amendment to Part 20 was published, effective February 4, 1974, which requires certain types of licensees to report each year the number of workers exposed to each of several radiation levels during that year.
5/22/74	39 FR 17972	On May 22, 1974, amendments to Parts 2, 20, 50, and 73 of a minor, procedural, and clarifying nature were published, effective as of that date.
6/28/74	39 FR 23990	**Special Curie Definitions and Concentration Values in Air and Water for Uranium and Thorium—Part 20** On June 28, 1974, amendments to Part 20 were published, effective July 29, 1974, which discontinued the use in Part 20 of the special curie definitions for natural uranium and natural thorium and amend associated concentration and quantity values.
7/25/74	39 FR 27121	**Miscellaneous Amendments—Parts 20, 50, and 70** On July 25, 1974, amendments to Parts 20, 50, and 70 were published, effective immediately, making minor editorial and corrective changes.
		Transuranic Waste Disposal—Part 20 On September 12, 1974, proposed amendments to Part 20 were published for comment that would prohibit the disposal by burial in soil of transuranium elements.
* 1/3/75	40 FR 799	**Radiation Protection; Implementation of NCRP Recommendations for Lower Radiation Exposure Levels for Fertile Women—Parts 19 and 20** On January 3, 1975, proposed amendments to Parts 19 and 20 were published for comment that would incorporate the intent of the recommendation of the National Council on Radiation Protection and Measurements (NCRP) in Report No. 39 that the radiation exposure to an embryo or fetus be minimized. (Has not yet become a final rule.)

Date	Federal Register Citation	Summary
6/25/75	40 FR 26679	**Storage and Control of Licensed Materials—Part 20** On June 25, 1975, an amendment to Part 20 was published, effective immediately, to clearly convey the intention that constant control be maintained over all licensed radioactive materials in unrestricted areas.
9/15/75	40 FR 42557	**Miscellaneous Amendments to Chapter—Parts 20, 37, and 73** On September 15, 1975, amendments to Parts 20, 37, and 73 were published, effective immediately, which correct the definition of "calendar quarter," change certain telephone listings and other pertinent information regarding the Commission's Regional Offices, and revoke Part 37.
10/31/75	40 FR 50703	**Clarifying and Corrective Amendments to Chapter—Parts 0, 20, 30, and 70** On October 31, 1975, amendments to Parts 0, 20, 30, and 70 were published, effective immediately, clarifying the definition of "random error" in Part 70 and making minor corrections and editorial changes in Parts 0 and 20. Part 30 was amended to require that Form NRC-313 be filed in duplicate.
10/31/75	40 FR 50704	**An Occupational Exposure Limit for Radon-222 and Its Use When Uranium Ore Dust is Present** On October 31, 1975, amendments to Part 20 were published, effective January 29, 1976, lowering the limit on occupational exposure to airborne radon-222 and its daughters to one-third of that currently permitted and changing the uranium ore dust provision to require consideration of radon-222 and its short-lived daughters in addition to uranium.
12/19/75	40 FR 58847	**Change of Terminology for "As Low As Practicable" Limits—Parts 20 and 50** On December 19, 1975, amendments to Parts 20 and 50 were published, effective January 19, 1976, which substitute the currently accepted phrasing "as low as is reasonably achievable" for the older, less precise terminology "as low as practicable" where it appears in the regulations.

Date	Federal Register Citation	Summary
4/19/76	41 FR 16445	**Miscellaneous Changes to Chapter—Parts 20, 30, 31, 32, 35, 40, 50, 55, 70, 73, 140, and 150** On April 19, 1976, amendments to Parts 20, 30, 31, 32, 35, 40, 50, 55, 70, 73, 140, and 150 were published, effective immediately, which change the address to which various reports and copies thereof should be sent by licensees and which specify particular offices to which reports should be addressed rather than a general directive to send reports to the Commission
5/3/76	41 FR 18300	**Preservation of Records—Parts 20, 30, 31, 32, 34, 40, 50, 55, 70, and 150** On May 3, 1976, amendments to Parts 20, 30, 31 32, 34, 40, 50, 55, 70, and 150 were published, effective June 2, 1976, which prescribe time periods for applicant and licensee retention of certain records, and provide that if a retention period is not otherwise provided, such records shall be maintained by the licensee or applicant until the Commission authorizes their disposition.
11/29/76	41 FR 52300	**Exposure of Individuals to Concentrations of Radioactive Materials in Air in Restricted Areas—Part 20** On November 29, 1976, amendments to Part 20 were published, effective December 29, 1976, concerning control of internal occupational exposures to radioactive materials, including provision for use of respiratory protective equipment
12/23/76	41 FR 55851	**Miscellaneous Amendments—Parts 7, 20, and 73** On December 23, 1976, amendments to Parts 7, 20, and 73 were published, effective immediately, which correct the address and phone number of the Region II office and change a reference to 10 CFR Part 9 in Part 7
5/19/77	42 FR 25721	**GAO Clearances, Reporting and Recordkeeping Requirements—Parts 20, 30, 31, 32, 33, 34, 35, 36, 40, 50, 55, 70, 71, 73, 140, and 150** On May 19, 1977, amendments to Parts 20, 30, 31, 32, 33, 34, 35, 36, 40, 50, 55, 70, 71, 73, 140, and 150 were published, effective immediately, which add the update notations, which state that the reporting or recordkeeping requirement has been approved by the General Accounting Office, and include the appropriate GAO approval number

Date	Federal Register Citation	Summary
4/18/77	42 FR 20138	**Corrective and Minor Amendments—Parts 0, 20, and 50** On April 18, 1977, amendments to Parts 0, 20, and 50 were published, effective immediately, which were minor and corrective in nature.
9/1/77	42 FR 43965	**Amendments to Revoke or Revise Certain Reporting Requirements—Parts 20, 32, 70, 73, and 150** On September 1, 1977, amendments to Parts 20, 32, 70, 73, and 150 were published, effective immediately, which revoke three reporting requirements, revise four reporting requirements to require telephone notification only, and revise two reporting requirements to increase the threshold for reporting damage to property.
12/27/77	42 FR 64619	**Caution Signs, Labels, Signals, and Controls—Part 20** On December 27, 1977, an amendment to Part 20 was published, effective March 14, 1978, which establishes additional requirements to improve safety in the use of and reduce the probability of accidental exposure of workers to sealed radioactive sources that produce very high levels of radiation.
5/24/78	43 FR 22171	**Removal or Defacing of Radioactive Materials Labels on Empty Containers—Part 20** On May 24, 1978, an amendment to Part 20 was published, effective June 23, 1978, which requires the removal or the defacing of radioactive labels on empty, uncontaminated containers prior to disposal.
7/7/78	43 FR 29270	**Clarifying Amendments—Part 20** On July 7, 1978, amendments to Part 20 were published, effective immediately, to clarify in 20.103 that exposure to radon-222 and its daughters may be averaged over 1 year and make minor editorial changes.
7/28/78	43 FR 32741	**Change of Address of Region II Office—Parts 1, 20, and 73** On July 28, 1978, amendments to Parts 1, 20, and 73 were published, effective immediately, to show the new address for the NRC Inspection and Enforcement Regional Office II.

Date	Federal Register Citation	Summary
9/29/78	43 FR 44827	**Personnel Monitoring Reports—Part 20** On September 29, 1978, amendments to Part 20 were published, effective December 13, 1978, to extend to all NRC specific licensees the requirement for submission of an annual statistical summary report on radiation exposure of workers.
11/9/78	43 FR 52201	**Miscellaneous Amendments—Parts 20, 21, 40, and 73** On November 9, 1978, amendments to Parts 20, 21, 40, and 73, were published, effective immediately, to change the telephone number for the NRC's Inspection and Enforcement Regional Office I and to exempt the general licensee under §40.25 from the requirements of the NRC's regulation "Notices, Instructions, and Reports to Workers; Inspection."
1/12/79	44 FR 2568	**Miscellaneous Amendments—Parts 20, 21, and 73** On January 12, 1979, amendments to Parts 20, 21, and 73 were published, effective immediately, which change the telephone number for the Commission's Inspection and Enforcement Regional Office V.
* 2/20/79	44 FR 10388	**Notices, Instruction, and Reports to Workers: Inspection Standards for Protection Against Radiation—Parts 19 and 20** On February 20, 1979, proposed amendments to Parts 19 and 20 were published for comment which would eliminate the accumulated dose averaging formula, 5(N-18), and the associated Form NRC-4 Exposure History, and impose annual dose-limiting standards while retaining quarterly standards.

Date	Federal Register Citation	Summary
6/6/79	44 FR 32349	**Control of Radiation Exposure to Transient Workers—Parts 19 and 20** On June 6, 1979, amendments to Parts 19 and 20 were published, effective August 20, 1979, which would require NRC licensees to control the total occupational radiation dose of individuals who work in NRC-licensed activities.
11/5/79	44 FR 63515	**Telephone Number Changes for Regions III and V—Parts 20, 21, and 73** On November 5, 1979, amendments to Parts 20, 21, and 73 were published, effective immediately to show the new telephone numbers for Inspection and Enforcement Regional Offices in Glen Ellyn, Illinois, and Walnut Creek, California.
2/29/80	45 FR 13434	**Immediate Reporting of Significant Events at Operating Nuclear Power Reactors— Parts 20 and 50** On February 29, 1980, amendments to Parts 20 and 50 were published, effective immediately to require timely and accurate information from licensees to NRC following significant events at operating nuclear power reactors.
3/5/80	45 FR 14199	**Department of Energy Organization Act—Minor and Clarifying Amendments—1, 2, 20, 30, 40, 50, 70, 73, 140, 150** On March 5, 1980, minor and clarifying amendments to Parts 1, 2, 20, 30, 40, 50, 70, 73, 140, 150 were published, effective immediately, making changes in names and definitions to reflect the transfer of functions from the Energy Research and Development Administration to the Department of Energy made by the Department of Energy Organization Act.
3/24/80	45 FR 18905	**Deletion of Reference to Panama Canal Zone; Minor Amendments—Parts 4, 20, 30, 40, 50, 55, 70, 110 and 150** On March 24, 1980, minor amendments to Parts 4, 20, 30, 40, 50, 55, 70, 110, and 150 were published, effective immediately, deleting all references to the Panama Canal Zone, reflecting the provisions of the Panama Canal Treaty of 1977 and the Panama Canal Defense Act of 1979.

Date	Federal Register Citation	Summary
* 3/20/80	45 FR 18023	**Standards for Protection Against Radiation: Advance Notice of Proposed Rulemaking** On March 20, 1980, proposed amendments to Part 20 were published for comment. The amendments would bring NRC radiation protection standards into accord with current developments in radiation protection.
* 3/28/80	45 FR 20493	**Advance Notice of Proposed Rulemaking on Certification of Personnel Dosimetry Processors** On March 28, 1980, proposed amendments to Part 20 were published for comment. The proposed rule presents alternative courses of action to correct the existing situation (indicated by tests): a significant percentage of personnel dosimetry processors may not be performing with an appropriate degree of accuracy.
* 4/17/80	45 FR 26072	**Environmental Radiation Protection Standards for Nuclear Power Operation** On April 17, 1980, proposed amendments to Part 20 were published for comment. The proposed rule incorporates the existing requirement for certain uranium fuel cycle licensees to comply with the Environmental Protection Agency's "Environmental Radiation Protection Standards for Nuclear Power Operation."
* 7/3/80	45 FR 45302	**Miscellaneous Clarifying Amendments** On July 3, 1980, proposed amendments to Part 20 were published for comment. The proposed rule would clarify the text of several sections with the view of avoiding possible misinterpretations.
10/30/80	45 FR 71761	**Standards for Protection Against Radiation; Burial of Small Quantities of Radionuclides — Part 20** On October 30, 1980, an amendment to Part 20 was published, effective January 28, 1981, which requires NRC licensees to obtain specific approval to bury small quantities of radionuclides. The amendments will provide a greater assurance that varied radioactive material will not present a health hazard.

Date	Federal Register Citation	Summary
* 10/8/80	45 FR 67018	**Standards for Protection Against Radiation -- Part 20** On October 8, 1980, the NRC published a notice of proposed rulemaking that would permit licensees greater leeway in disposing of liquid scintillation media and animal carcasses containing tracer levels of hydrogen-3 (tritium) and carbon-14. The NRC is also considering amending its regulations to raise the annual limits for disposal of hydrogen-3 and carbon-14 by release to the sanitary sewerage system.
2/25/81	46 FR 13971	**Disposal of High-Level Radioactive Wastes in Geologic Repositories; Licensing Procedures — Parts 2, 19, 20, 21, 30, 40, 51, 60, and 70** On February 25, 1981, NRC published a rule, effective March 27, 1981, which sets forth requirements applicable to the Department of Energy for submitting an application for a license and specifies the procedures which the Commission will follow in considering such an application.
3/11/81	46 FR 16230	**Biomedical Waste Disposal — Part 20** On March 11, 1981, NRC published a final rule, effective immediately, which permits licensees greater leeway in disposing of liquid scintillation media and animal carcasses containing tracer levels of hydrogen-3 (tritium) or carbon-14. The licensees may now dispose of specified concentrations of these materials without regard to their radioactivity. The new regulations also increase the annual limits for disposal of hydrogen-3 and carbon-14 by release to the sanitary sewerage systems.
3/25/81	46 FR 18525	**Environmental Radiation Protection Standards for Nuclear Power Operations — Part 20** On March 25, 1981, NRC published final amendments to its regulations to incorporate the existing Environmental Protection Agency requirement for certain uranium fuel cycle licensees to comply with the EPA's "Environmental Radiation Protection Standards for Nuclear Power Operations." The effective date for these amendments is June 23, 1981. The effective dates for the existing requirement to comply with EPA's rule are as specified in 40 CFR 190.12. In addition, the amendments require licensees to submit reports to NRC when 40 CFR Part 190 limits have been or may be violated.

Date	Federal Register Citation	Summary
10/30/81	46 FR 53647	Radiation Protection Survey Requirement; Miscellaneous Clarifying Amendments - Part 20. On October 30, 1981, NRC published clarifying amendments to its regulations for radiation protection. The new rule, effective November 30, 1981, makes clear that persons may be cited for violation of NRC rules for failure to perform surveys when indicated or for performing inadequate surveys.
11/25/81	46 FR 57665	Change of Address for NRC Region V Office - Parts 1 and 20 On November 25, 1981, NRC amended its regulations to inform the public of the new address and telephone number of its Region V office located in Walnut Creek, Cal.
12/1/81	46 FR 58281	Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation; Minor Clarifying and Conforming Amendments - Parts 11, 19, 20, 21, 25, 72, 75, 95, and 170 On December 1, 1981, NRC published minor clarifying amendments to its regulations for Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation and conforming amendments to other parts of the commission's regulations. This rule, effective immediately, is necessary to ensure proper application of the regulations.

Date	Federal Register Citation	Summary
4/15/82	47 FR 16162	Standards for Protection Against Radiation; Replacement of Provisions of Regulatory Guide 8.15 - PART 20 On April 15, 1982, NRC amended its regulations to place requirements for an acceptable respiratory protection program, currently incorporated by reference in 10 CFR 20.103, directly into 10 CFR 20.103. The amendment is effective immediately.
9/20/82	47 FR 41336	Minor Clarifying Amendments -Parts 1, 20, 21, and 73 On September 20, 1982, NRC published amendments to its regulations, effective immediately, to inform the public of administrative changes. The amendments codify nomenclature changes required by a reorganization of NRC staff activities; reflect the reassignment of the responsibility for implementing the Paperwork Reduction Act and for preparing the monthly NRC Issuances; publish the new commercial telephone number for the NRC's Region IV Office; and announce that the NRC Region IV Uranium Recovery Field Office, located in Denver, Colorado, is to be operational October 4, 1982.
12/27/82	47 FR 57446	Licensing Requirements for Land Disposal of Radioactive Waste - Parts 2, 19, 20, 21, 30, 40, 51, 61, 70, 73 and 170. On December 27, 1982, NRC published amendments to its regulations that set out licensing procedures, performance objectives and technical requirements for the licensing of facilities for the land disposal of low-level radioactive waste. Part 20 was amended effective immediately. Part 6 and amendments to Parts 2, 19, 21, 30, 40, 51, 70, 73 and 170 are effective January 26, 1983.

Advance Notice of Proposed Rulemaking/Proposed Rules that have not as yet been finalized - Currently being updated.

Date	Federal Register Citation	Summary
1/3/75 (PR)	40 FR 799	(Being incorporated into Part 20 revision.) Lower Radiation Exposure Levels for Fertile Women. The proposed rule would incorporate the intent of the recommendation of the National Council on Radiation Protection and Measurements (NCRP) in Report No. 39 that the radiation exposure to an embryo or fetus be minimized. It would help provide assurance that radiation exposures of fertile women and fetuses will be kept well within the numerical dose limits recommended by the NCRP without undue restriction on activities involving radiation and radioactive material. The proposed rule would amend NRC regulations to require licensees to instruct workers regarding health protection problems associated with exposure to radiation and radioactive materials by providing information about biological risks to embryos and fetuses. The proposed rule would also contain a Commission statement that licensees should make particular efforts to keep the radiation exposure of an embryo or fetus to the very lowest practicable level during the entire gestation period as recommended by the NCRP.

Date	Federal Register Citation	Summary
2/20/79 (PR)	44 FR 10388	(Currently being incorporated into Part 20 revision.) Changes in Radiation Dose-Limiting Standards. The proposed rule was published because of the desire of the Commission to reduce the risks of occupational radiation doses in Commission-licensed activities, the Commission's continuing systematic assessment of exposure patterns, and new recommendations of the International Commission on Radiological Protection for controlling radiation dose. In preparing the proposed rule, the Commission has also taken into account recently published interpretations of epidemiological data and associated recommendations for lower dose standards as well as petitions for rulemaking to lower dose standards, PRM-20-6 and PRM-20-6A. The proposed rule would eliminate the accumulated dose averaging formula and the associated Form NRC-4, Exposure History, and impose annual dose-limiting standards while retaining quarterly standards. In addition to the imposition of annual dose-limiting standards, the proposed rule contains provisions that would express, in terms of new annual standards, the standard for dose to minors, the requirement for control of total dose to all workers including transient and moonlighting workers. The changes contained in the proposed rule are intended to benefit workers by increasing radiation protection for them and to encourage some NRC licensees to take further action to reduce occupational radiation doses.
3/20/80 (ANPRM)	45 FR 18023	TITLE: Standards for Protection Against Radiation. The advance notice of proposed rulemaking sought comments on a proposal to completely revise NRC's standards for protection against radiation (Part 20).

Date	Federal Register Citation	Summary
3/28/80 (ANPRM)	45 FR 20493	(Proposed Rule currently being prepared by staff.) TITLE: Performance Testing of Personnel Dosimetry. The advance notice of rulemaking sought comment on a proposal to add amendments to 10 CFR Part 20 that would improve the accuracy and consistency of reported occupational radiation dose measurement by requiring proficiency tests of dosimetry processors who perform dosimetry for NRC licensees. The proposed amendments would require NRC licensees to have personnel dosimeters (devices carried or worn by each radiation worker to measure radiation exposure received during work) processed by a dosimetry service that is certified by an NRC approved or specified testing laboratory. The ANPRM summarized the results of the pilot study of dosimetry processors against a draft HPSSC/ANSI standard on performance testing of dosimetry processors, and outlined alternatives for the operation of a testing laboratory. As described in the ANRPM, this program would involve amendments to 10 CFR Part 20 that would establish a program of this type. The performance standard to be used in this testing program would be the final HPSSC/ANSI standard. COSTS: The present dosimetry processor cost per worker per year is about $24. The proposed program would add $0.51. The accreditation program would add 2% to the total dosimetry cost of about $700,000 per year.

Date	Federal Register Citation	Summary
		(Currently awaiting publication in the Federal Register.) TITLE: Reports of Theft or Loss of Licensed Material. The proposed rule would remove a discretionary clause that requires each NRC licensee to report a loss or theft of licensed material only when it appears to the licensee that the loss or theft would pose a substantial hazard to persons in an unrestricted area. The proposed rule would provide increased radiological safety to the public by requiring all losses or thefts of licensed material be reported to the NRC if the loss exceeds the minimum quantity specified in the regulations. COSTS: The proposed amendment could result in 30 to 35 additional reports of loss or theft annually for a total increase of roughly 100 licensee staff hours spread out among 8000 licensees.

Date	Federal Register Citation	Summary
3/83		(Proposed rule currently being prepared by staff.) TITLE: Part 20 Revision The Nuclear Regulatory Commission (NRC) is proposing a major revision of its regulations which provide the requirements for the protection of individuals who are exposed, both within and outside of the workplace, to ionizing radiation from routine activities (normal operations) which are licensed by the NRC. Since the revision contains basic standards for protection against radiation, the proposed revision would affect all categories of NRC licensees. The intent of the revision is to improve NRC radiation protection standards by reflecting developments in the principles that underlie radiation protection and advances in related sciences that have occurred since the promulgation of 10 CFR Part 20 more than twenty years ago. The expected result of promulgating and implementing the proposed revised rule is an improved rule that provides better assurance of protection, establishes a clear health protection basis for limits, applies to all licensees in a consistent manner, and reflects current information on health risk, dosimetry, and radiation protection practices and experiences. In addition, this revision would be consistent in principle with most of the recommendations of the International Commission on Radiological Protection set forth in ICRP Publications. The proposed revision of Part 20 would supersede proposed amendments to 10 CFR Parts 19 and 20 published by the Atomic Energy Commission on January 3, 1975 (40 FR 799) regarding maintenance of doses to an embryo or fetus as low as is reasonably achievable, and proposed amendments to 10 CFR Part 20 published by the NRC on February 20, 1979 (44 FR 10388) deleting the 5(n-18) dose-averaging formula in the present Part 20. Preliminary cost estimate $22 million to licensees.

QUESTION 46: Does the NRC use adjudicatory hearings in resolving emergency planning issues? If not, why not? Does the NRC consider the results of an emergency response plan exercise in its plant licensing review? If not, why not? If so, does it review these results in an adjudicatory hearing?

ANSWER:

The NRC does use adjudicatory hearings in resolving emergency planning issues. Specifically, those emergency planning issues raised in licensing proceedings in which hearings are held are resolved through litigation at hearing. An example of a hearing in which emergency planning issues are presently being litigated is the Shoreham operating license proceeding.

The NRC does consider the results of an emergency plan exercise in its plant licensing review. Pursuant to 10 CFR § 50.47(b)(14) and 10 CFR Part 50, Appendix E, § F, exercises are to be conducted to allow an evaluation of emergency response capabilities and identification of planning deficiencies for correction. Such exercises are required prior to any NRC authorization for a plant to operate above 5% of rated power. 10 CFR Part 50, Appendix E, § F.1.b. The results of an exercise are not, however, reviewed in an adjudicatory hearing. Under 10 CFR § 50.47(a)(2), the exercise is designated as part of the operational inspection process and is not required for the initial licensing decision.

The rationale underlying this latter provision is twofold. First, it is important to hold the full-scale offsite exercise as near in time as possible to commercial operation of the facility to ensure that those licensee personnel participating in the exercise are those who would be responsible for managing an actual emergency after full-power operation has commenced. If the operating license hearing record were to be held open pending the conduct of the exercise and analysis of the results, licensing of the facility could be significantly delayed. Second, unless the exercise is so flawed as to cast doubt on the fundamental soundness of the plan, any deficiencies which might come to light during the exercise are better addressed by direct corrective action rather than by litigation over why the error occurred. The adjudicatory hearing is intended to examine the emergency plan itself and the steps which will be taken to implement it. The exercise tests the plan prior to operation of the facility to ensure that it is workable. In the Commission's view, the exercise and its review are by nature part of the process leading to startup of the facility, and may be compared in this respect to testing of plant safety systems.

QUESTION 47a. Does the NRC have, or plan to set, definitive standards (both generic and specific) for measuring the adequacy of the protective measures in an emergency response plan?

ANSWER.

The regulations (10 CFR 50.47(b)) require that all emergency plans contain guidance on a range of protective actions that are consistent with Federal guidance. Federal guidance and criteria on reactor accident protective measures is contained in NUREG-0654/FEMA-REP-1. In addition, research has been proposed for FY 84 to refine these criteria, taking into consideration the results of the ongoing severe accident consequence research.

QUESTION 47b. Should the NRC set standards for the time within which a population must be evacuated to a safe area after an accident? For radiation exposure permitted during an emergency response?

ANSWER.

The NRC does not set standards for the public for evacuation times following notification by offsite authorities to evacuate. Effective evacuation is a function of the particular nuclear facility site. It is dependent on a number of variables. These variables include population and its distribution around the site, the road network and its capacity, vehicle occupancy, possible congestion points such as intersections and lane restriction, time of day and weather. Nuclear facility licensees and applicants develop evacuation time estimates for the 10-mile plume exposure pathway Emergency Planning Zone (EPZ), taking into account the variables identified above. These evacuation time estimates are provided and used by offsite emergency organizations in developing their plans for taking protective measures, such as evacuation and sheltering, within the 10-mile EPZ. In its evaluation of emergency offsite plan adequacy, including evacuation time, FEMA takes into consideration the site specifics noted above. These estimates are also provided to the NRC.

With regard to standards for radiation exposure, the Environmental Protection Agency has established a range of Protective Action Guides (PAGs) for use by State and local governments in developing their emergency plans. PAGs are based on the projected dose to individuals in the population and are used to initiate predetermined protective actions in order to minimize the dose from an accident. A PAG does not imply an acceptable dose. The overall objective of emergency planning is to provide dose savings for a spectrum of accidents by initiating emergency response actions rather than specifying the amount of radiation exposure permitted in an emergency. In addition, the NRC provides guidance to nuclear facility licensees with regard to exposure limits for emergency workers. Therefore, the Commission believes that the information now available in this area is adequate.

QUESTION 48. Does the recently-released Sandia study of the risk and consequences of a reactor accident suggest that the NRC should extend the current 10-mile Emergency Planning Zone to at least 20 miles? Or vary the zone for specific plants? Please explain. Based on the data in the Sandia study, please provide the Peak Fatal Radius and Peak Injury Radius for each of the plants currently operating or under construction.

ANSWER.

The results of the Sandia Study (NUREG/CR-2239 "Technical Guidance for Siting Criteria Development") give additional assurance that the current 10-mile Emergency Planning Zone is conservatively based and should not be expanded. All of the studies on evacuation and sheltering in the Sandia Study confirm that, even in the light of the most severe-lowest probability releases, the greatest benefit of emergency response occurs in the first few miles of the nuclear power plant.

The Sandia Study contains the following statement: "Evacuation before containment breach within 2 miles, after release within 10 miles, and sheltering from 10 to 25 miles appears to be a particularly effective response strategy." The Sandia Study gives no indication that the generic 10-mile EPZ for all power plants is unreasonable and should be expanded. The analyses performed in the study show that the only parameters which have a significant impact on the distance relationships are source term and power level. Source terms are a generic consideration. Power level, on the other hand, is a plant specific consideration. However, there needs to be a significant reduction in power level before the distances are significantly impacted. Current emergency planning requirements already give special consideration to low power reactors.

Attached to this response is a copy of the CRAC2 generated final results matrix for each site.* Results 170 and 176 give the requested fatal radius and injury radius, respectively. "Peak" values are given in the appropriately labeled column. It is important to realize that the far right column on the copy gives the associated probability of the peak value, conditional upon the release. For example, the Allens Creek site would predict a peak fatal radius [i.e. the maximum calculated distance at which early fatalities occur] of 25 miles with an associated probability of about one in a thousand given that a low probability Siting and Source Term 1 (SST1) release (most severe) also occurs. As the siting study indicates, based upon currently available probabilistic risk assessment analyses, a representative probability for SST1 is about one in one hundred thousand per reactor year for a range of light water reactor designs. While there are very large uncertainties (factors of 10 to 100) in the accident probabilities associated with a specific design, the resultant probability of occurance of an accident with such a large peak fatal radius is estimated at approximately 10^{-8} per reactor year.

* The attachment has been retained in the committee files.

Question 49. Please describe any changes in the NRC's policy on considering "need for power" in its licensing decision. Why shouldn't the NRC continue to consider "need for power" in operating license decision for plants that were under construction prior to any change in the policy?

ANSWER.

Effective April 26, 1982, the Commission amended its regulations to provide that for National Environmental Policy Act (NEPA) purposes, need for power issues would not be considered in operating license proceedings for nuclear power plants and need not be addressed by operating license applicants in environmental reports submitted to the NRC nor by the staff in environmental impact statements, at the operating license stage. 10 C.F.R. §§ 51.21, 51.23 and 51.53. Pursuant to our regulations, an exception to or waiver of the rule will be permitted in particular cases if special circumstances are shown.

The Commission believes that in accordance with its NEPA responsibilities, the need for the power to be generated by a proposed nuclear power plant should be considered and resolved in the construction permit proceeding associated with the proposed facility. Since this proceeding occurs prior to the start of construction real alternatives to the construction and operation of the facility exist, including no additional generating capacity at all if no "need" exists.

At the time the rule change occurred the Commission addressed whether the changed rule should apply to ongoing operating license proceedings. The Commission saw no compelling reason not to apply the new rule to ongoing as well as future proceedings. Since need for power was considered in every plant under construction at the time the rule was adopted as part of the construction permit review, the Commission considered it appropriate to make no distinction between ongoing and future operating license proceedings.

QUESTION 50. In light of the recent Sandia study on the consequences and probability of reactor accidents, the NRC ever discussed, or released to the public, detailed information about the consequences of severe (particularly Class 9) accidents without regard to their probability of occurrence? If not, why not? Please provide any analysis you may have of the consequences of a severe accident.

ANSWER.

Prior to mid-1980, the staff calculated only the radiological dose consequences of reactor accidents that were formerly called Class 3-8 without assigning any probability either for these accidents or their dose consequence. Information regarding these accident consequences, which were estimated with conservative assumptions, were included in the NRC staff's Safety Evaluation Reports (SER) for specific licensing actions. The purpose of this type of dose (consequence) calculations was to make design evaluations of the nuclear power plants' engineered safety features with respect to their ability to mitigate the consequences of the postulated accidents so that the offsite doses would not exceed the 10 CFR Part 100 criteria. Information regarding estimates of these consequences using realistic assumptions were reported in Draft, and Final Environmental Statements (DFS/FES). The so-called Class-9 accidents were not analyzed in SER or DES/FES because these accidents involve sequences of successive failures more severe than those required to be considered in the design bases of protection systems and engineered safety features. Although their consequences could be severe, the probability of their occurrence was judged to be very small.

Subsequent to the TMI accident, there has been a change in the above procedure. Pursuant to the Commission Statement of Interim Policy on Nuclear Plant Accident Considerations Under the National Environmental Policy Act of 1969 (published in 45 FR, June 13, 1980), the NRC staff has been providing much broader information on impacts (including health effects, property damage, etc.) of reactor accidents, including those formerly called the Class-9, in DES/FESs. Because of the low probability of these Class-9 accidents, equal consideration has been given both to the estimates of the consequence magnitudes and the probabilities associated with them (including the probabilities of the accidents to which these consequences are due) -- consistent with the Statement of Interim Policy.

The following is an alphabetical listing of nuclear power plants for which DES/FESs have been issued since the summer of 1980 in which impacts of the so-called Class-9 accidents are reported as required by the Commission's Interim Policy Statement:

Bellefonte
Byron
Callaway
Catawba
Clinton
Comanche Peak
Fermi-2
Grand Gulf
Harris
Midland
Palo Verde
Perry
San Onofre 2,3
Seabrook
St. Lucie-2
V. Summer
Susquehanna
Waterford-3
Wolf Creek
WNP-2

QUESTION 50

A copy of NUREG/CR-2239, "Technical Guidance for Siting Criteria Development," is attached. Also, as an example, a Final Environmental Impact Statement on Catawba Nuclear Station is attached. Both of these documents describe in detail the consequences of a severe accident. *

The Reactor Safety Study attempted to display the nature and range of severe accident consequences and the probabilities which should be associated with them. Probabilistic risk analysis has been further refined since then and both NRC-sponsored and industry publications have displayed a range of consequences with extreme values similar to those associated with the siting study. Example publications include the 1978 report SAND78-0556, "An Investigation of the Adequacy of the Composite Population Distributions Used in the Reactor Safety Study;" the 1980 report NUREG-0715, "Task Force Report on Interim Operation of Indian Point;" and the many Environmental Impact Statements named above which have been published since the Commission adopted the policy of describing severe or Class 9 accident risk in such statements. A similar range of consequences can be found in recent industry-sponsored risk analyses such as the Zion Probabilistic Safety Study and the Indian Point Probabilistic Safety Study.

* The attachments have been retained in the committee files.

QUESTION 51. Please describe recent and proposed changes in NRC policy on the so-called "immediate effectiveness" rule. Doesn't the immediate effectiveness rule tend to bias licensing decisions against intervenors by allowing a licensee to proceed with a particular action--and commit additional resources--while an appeal is pending?

ANSWER.

Under the Commission rules, the decision of a Licensing Board in an operating license proceeding recommending issuance of a license is not effective immediately.

On October 25, 1982, the Commission published a Notice of Proposed Rulemaking requesting public comment on a proposal to amend the immediate effectiveness rule to conform the procedures for review of construction permit decisions to those presently in effect for operating license decisions. The principal effect of this modification would be to remove the Appeal Board from the effectiveness review of construction permit decisions and have the Commission review directly favorable Atomic Safety and Licensing Board (ASLB) decisions. The General Counsel's Office is analyzing the public comments and will submit recommendations to the Commission in the near future. Also before the Commission is a Regulatory Reform Task Force proposal to revive the original immediate effectiveness rule, i.e., to allow ASLB decisions to become effective immediately, thereby authorizing issuance of construction permits and operating licenses on the basis of favorable ASLB decisions pending subsequent review. Under any of the scenarios outlined above, the Atomic Safety and Licensing Appeal Board (ASLAB) would conduct its detailed review of the merits of ASLB decisions and parties could request a stay of ASLB decisions pending such detailed review.

In determining whether a stay should be granted, the Commission applies the same standards that are used by the federal courts. The Commission believes that application of those standards should result in the granting of stay requests when an intervenor can establish that it would be prejudiced by construction or operation of a facility during the pendency of appeals. Accordingly, the Commission does not believe its immediate effectiveness rules prejudice intervenors.

Additional views of Commissioner Gilinsky are attached.

Commissioner Ahearne's dissenting view on the proposed rulemaking concerning immediate effectivenes reviews for construction permit decisions is attached.

QUESTION 51 Additional Views of Commissioner Gilinsky:

and responsibility for, the NRC's most important licensing decision.

QUESTION 51. Dissenting Views of Commissioner Ahearne

I was willing to maintain the status quo. Addressing immediate effectiveness of Licensing Board decisions for construction permits should involve a substantial discussion. Because of the limited number of outstanding construction permit applications, such a discussion would have limited significance for the near term. At the same time, major changes to the licensing process are being discussed, which in turn will affect considerations underlying immediate effectiveness. Consequently, I was willing to defer consideration of the issue. However, the Commission chose to take up the matter at this time.

In a 1978 Seabrook opinion the Commission pointed out that "our rule giving immediate effectiveness to our Licensing Board's grant of a construction permit and our stay rule often operate together to assure that Commission-level review will not take place until such time as construction is well underway. This case illustrates the need to develop a procedure for ASSURING EARLY Commission-level review of controverted licensing proceedings, where appropriate, particularly where siting is an issue." Public Service Company of New Hampshire (Seabrook Station, Units 1 and 2), CLI-78-1, 7 NRC 1, 6-7 (1978) (footnote omitted). In that opinion the Commission announced it was going to initiate a study to assess the issues. In January 1979, the Commission established a committee to conduct the study; and in December 1979, the committee submitted its final report to the Commission (often referred to as the "Milhollin study").

As a separate matter, as a result of the Three Mile Island accident, in October 1979 the Commission issued a formal statement that new construction permits (as well as limited work authorizations and operating licenses) "shall be issued only after action of the Commission itself." The current version of the regulations was adopted in November 1979 to implement that decision.

After consideration of the Milhollin study, the Commission issued a notice of proposed rulemaking in May 1980 in order to obtain comment on the three options for altering the Commission's immediate effectiveness rule discussed by the Committee. In March 1981, the Office of the General Counsel prepared a paper proposing the Commission once again address the issues raised in Seabrook and the proposals suggested by the Milhollin study. In connection with that paper OGC was asked to prepare the current proposal.

I am not concurring because I do not believe the Commission has addressed the concerns identified in Seabrook or given the Milhollin study the full consideration it deserves.

QUESTION 52. I understand the NRC intends to review the record of the GPU vs. Babcock and Wilcox case, to determine its implications for the TMI-1 restart proceedings and GPU's $4 billion suit against the NRC. It has apparently assigned this task to a staff group headed by Victor Stello. Although at lease one Commissioner requested that the General Counsel conduct this review, a majority of the Commission denied the request.

a. How does this decision comport with the separation of functions requirement of the Administrative Procedures Act? Please explain.

ANSWER.

The primary purposes for reviewing the transcripts of the GPU vs. Babcock and Wilcox trial are to determine whether the record contains information which would affect the Commission's understanding of the TMI-2 accident and also to assist the NRC in its defense of the GPU tort claim lawsuit. Because the Commission recognizes that the staff's analysis could also have implications for the Commission's TMI-1 Restart decision, we have provided copies of the staff analysis to the parties to the Restart proceeding and have invited their comments on the staff's analysis. Because the primary purpose of requesting such an analysis is unrelated to TMI-1 Restart, and the parties have been given an opportunity to comment on the analysis, the Commission does not believe that requesting the staff to perform the analysis violates the separations of functions requirements of the Administrative Procedure Act. The Office of the General Counsel has been assigned responsibility to conduct an independent review of the staff analysis and the comments of the parties and to provide the Commission with appropriate recommendations.

Additonal views of Commissioners Gilinsky and Asselstine are attached.

QUESTION 52. a. Additional Views of Commissioner Gilinsky

What the Commission has done is to ask the NRC staff, a party to the TMI-1 proceeding to advise it with regard to its decision in that case. The Commission should either have asked all the parties to comment on the transcript of GPU v. B&W or it should have turned to the General Counsel or the Office of Policy Evaluation for advice.

QUESTION 52. Additional Views of Commissioner Asselstine

Commissioner Asselstine supported Commissioner Gilinsky's request for an independent review of the transcript in GPU v. B&W by the General Counsel.

QUESTION 52. b. Is the decision to deny the request of a Commissioner to assign a task to the OGC consistent with the NRC Reorganization Plan and the Atomic Energy Act? Please explain.

ANSWER.

The Office of General Counsel believes that the Commission's decision is consistent with the NRC Reorganization Plan, the Atomic Energy Act, and the Energy Reorganization Act. A copy of the OGC analysis is enclosed. The Commission has not yet had the opportunity to evaluate the OGC analysis.

Additional views of Commissioners Gilinsky and Asselstine are attached.

QUESTION 52. b. Additional Views of Commissioner Gilinsky

The majority's decision to block my request for the advice of the General Counsel on a case pending before this Commission is contrary to the provisions of the Atomic Energy Act and Reorganization Plan No. 1 of 1980 on Commissioner access to information and inherently inconsistent with the operation of a Commission.

QUESTION 52. Additional Views of Commissioner Asselstine

Commissioner Asselstine supported Commissioner Gilinsky's request for an independent review of the transcript in GPU v. B&W by the General Counsel.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

March 25, 1983

MEMORANDUM FOR:
Chairman Palladino
Commissioner Gilinsky
Commissioner Ahearne
Commissioner Roberts
Commissioner Asselstine

FROM: H.H.E.P.
Herzel H. E. Plaine
General Counsel

SUBJECT: REVIEW AND ANALYSIS OF THE TRANSCRIPT IN GPU v. B&W

This is in response to Chairman Palladino's request of March 9, 1983, for OGC views on the legality of a Commission decision directing EDO, rather than OGC, to respond to Commissioner Gilinsky's request for a review and analysis of the transcript in GPU v. B&W. It is our opinion that the Commission's action on this matter is authorized by section 201(a)(1) of the Energy Reorganization Act of 1974, 42 U.S.C. § 5841, and by Reorganization Plan No. 1 of 1980, reprinted in 42 U.S.C.A. § 5841.

STATUTORY BACKGROUND AND LEGISLATIVE HISTORY

It is not in dispute that under section 1(d) of the Reorganization Plan and section 201(a)(1) of the Energy Reorganization Act each individual Commissioner has an unqualified right of access to existing agency information. However, at issue here is the right of individual Commissioners to require the development of information which is not in existence and which requires the commitment of staff resources to develop.

Statements in the House 1/ and Senate 2/ Reports on the Reorganization Plan reveal a legislative intent to qualify the right of individual Commissioners to require the

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1/ House of Representatives Report No. 96-1043 on the Reorganization Plan No. 1 of 1980, Adverse Report to Accompany H. Res. 624, May 21, 1980, page 10.

2/ Senate Report No. 96-790, to Accompany S. Res. 397, Disapproving Reorganization Plan No. 1 of 1980, page 17.

CONTACT: Martin Malsch, OGC
Juan L. Rodriguez, OGC
634-1465

QUESTION 52 b.
Attachment

development of information not in existence and requiring the commitment of NRC staff resources to develop. The comments reflect a compromise between the competing considerations of assuring Commissioner access to information and analyses necessary or useful for the performance of their functions and the management inefficiency which results from allowing every Commissioner to assign tasks to the staff. It is clear that the qualification was intended to foster the orderly assignment of work and the establishment of priorities. 3/

The House Report contains the following language:

> Requests for information not in existence and, therefore, requiring staff resources to develop, and requests for staff opinions or recommendations shall be directed to the staff through the Chairman or his designee to foster orderly management processes, including the setting of work priorities. 4/

The Senate Report stated:

> Individual members of the Commission have full access to all information in order to assure that diverse views of members are properly informed, except that requests for information not in existence, and therefore, requiring staff resources to develop, and requests for staff opinions or recommendations shall be directed to the staff through the Executive Director for Operations in order to foster orderly assignment of work and setting of priorities. 5/

The House Report goes on to indicate that the Commission itself retains the authority to resolve disagreements between the Chairman and individual Commissioners relating to this type of request:

> "In the case of disagreement between the Chairman and a member as to the need or value of such a request in relation to staff effort or the time in which it is required, the issue shall be resolved by the Commission."

3/ House Report, supra at page 4.
4/ House Report, supra at page 10.
5/ Senate Report, supra at page 18.

Furthermore, the House Report, supra, at page 5, recognizes a Commission authority to set guidelines for the development of information as part of its policy development function. The Report notes that the Commission would be best served by the adoption of such guidelines and states:

> The collegial body is the central component of the agency, charged with policy setting, direction and control. That body should, as a matter of course, determine the agency's priorities, which are then carried out under the Chairman's direction. Individual requests from the Commissioners may not receive priority attention if the requested work does not come within the subject areas determined by the Commission as requiring primary staff attention.

The legislative history of the Plan describes this Commission's policy setting function in broad terms as follows:

> "Policy formulation" shall include any determination, whether specific or generic, affecting the substance of the Commission's responsibilities concerning the common defense and security and the health and safety of the public. It may therefore encompass a variety of activities beyond the establishment of broad principles to govern Commission action: for example, major administrative decisions that have substantive implications; approval of the NRC budget, including specific programs; the setting of research priorities; implementing values.

Senate Report at page 15. See also House Report at page 8.

The final piece of information necessary for our analysis is section 4(d) of the Reorganization Plan which provides that "the heads of Commission level offices or successor offices, of the General Counsel [etc., listing the other Commission level offices] shall continue to report directly to the Commission and the Commission shall continue to receive such reports."

ANALYSIS

The request by Commissioner Gilinsky for an OGC review of the GPU v. B&W transcript entails a review of 47 volumes of transcript, totalling over 7,000 pages, which by itself would be incomplete in view of the approximately 13,000 pages of exhibits, some of which are depositions adding additional testimony. A parallel review of the same transcript is also under way by EDO staff. However, the EDO staff review, unlike the proposed OGC review, covers the entire evidentiary record of the GPU v. B&W case, including the 13,000 pages of exhibits, and involves the full time services of several technical and legal personnel who are familiar with the numerous background investigations of the TMI-2 accident and technical safety issues. Both the proposed OGC review and the EDO staff review entail generation of new information and analyses not in existence.

The language of the Reorganization Plan and the Energy Reorganization Act do not on their face address the right of an individual Commissioner to request studies and analyses which are not in existence and which require resources to develop. Therefore, any legislative history in point would be controlling. The legislative history of the Reorganization Plan is quite clear that the Commission itself is to exercise preeminent authority in this area and that the right of individual Commissioners is qualified or limited. In this area, as stated in the House Report, "in the case of disagreement...as to the need or value of such a request in relation to staff effort or the time in which it is required, the issue shall be resolved by the Commission." 6/

This view is bolstered by section 4(d) of the Reorganization Plan also cited above. Section 4(d) of the Plan provides that Commission level offices such as OGC "report directly to the Commission" and not to individual Commissioners. The use of the word "report" denotes the existence of supervisory authority. Commission supervisory authority entails a preeminent Commission role in fostering the orderly assignment of work and the establishment of priorities. This would include decisions on which projects or tasks should be performed by Commission level offices, such as OGC, as opposed to EDO staff offices.

Finally, the particular task at issue here impinges directly on the Commission's policy development function, since the results of the requested transcript review would be relevant both to the TMI-1 restart adjudication before the Commission and to the need for additional enforcement action. As the House Report notes, the collegial Commission is the central

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6/ The legislative history cited above appears to deal specifically with Commissioner requests for information to be developed by EDO staff. However, the discussion in the legislative history interprets section 1(d) of the Reorganization Plan which references section 201(a)(1) of the Energy Reorganization Act. These provisions establish the respective authority of the Commission and individual Commissioners and are equally applicable to requests to Commission level offices and EDO staff offices. Hence, the legislative history should be equally applicable to both kinds of requests.

component of the agency charged with policy setting, including major administrative decisions, and determining agency priorities. 7/

The proposition that the Commission itself, as distinguished from an individual Commissioner, exercises the preeminent role here is fully consistent with the concept of the collegial Commission embodied in the governing statutes and legislative history. 8/

7/ House Report, supra, at pages 5, 10.

8/ It should be noted, that in certain specific areas the Commission has already exercised its collegial authority by assigning certain functions to OGC, such as advising individual Commissioners on conflicts of interest issues. 5 CFR § 738.201-203; 10 CFR 0.735-3(h). The Commission could, of course, change the delegation of authority and vest the function elsewhere.

cc: OPE
OCA
OIA
EDO
ELD
SECY

QUESTION 52. c. Isn't there a conflict of interest in having staff, whose actions were indirectly involved in the GPU vs. Babcock and Wilcox case and will be directly involved in the GPU vs. NRC case, conduct this review? Please explain.

ANSWER.

The NRC staff conducted a thorough review of the TMI accident and is in the best position to evaluate the GPU vs. Babcock and Wilcox transcripts to determine whether the trial produced new information or whether witnesses provided testimony that differed from that previously given to the NRC staff, the Rogovin inquiry, or the Kemeny Commission. The Commission believes the staff will be able to prepare an objective analysis of the transcripts.

Additional views of Chairman Palladino and Commissioner Gilinsky are attached.

QUESTION 52. c. Additional Views of Chairman Palladino

Chairman Palladino notes that the majority position of the Commission on this matter is reflected in NRC's letter to the Committee dated April 19. 1983. (See attached letter.)

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CHAIRMAN

QUESTION 52. c.
Attachment
Chairman Palladino's views

April 19, 1983

The Honorable Morris K. Udall, Chairman
Subcommittee on Energy and the Environment
Committee on Interior and Insular Affairs
United States House of Representatives
Washington, D. C. 20515

Dear Mr. Chairman:

I am writing to you on the Commission's behalf with reference to Commissioner Gilinsky's April 7, 1983 letter regarding access to information. We believe that without more background, the statements expressed in that letter could be misleading. Further I believe that the Commission's actions in this matter have been entirely consistent with the Atomic Energy Act and the Reorganization Plan.

It would certainly be a most serious matter if a Commissioner's access to information were curtailed, but such is not the case. I believe an inquiry into the facts would confirm that Commissioner Gilinsky is claiming the authority to decide who does what work within NRC. I firmly believe that a clear purpose of the Reorganization Plan was to give that authority to the Chairman or to the Commission.

In late December 1982, the Commission requested the Executive Director for Operations "to have knowledgeable staff" examine the trial court record of the GPU v. B&W lawsuit to determine whether information contained in that record might impact on the NRC's understanding of the TMI-2 accident. The EDO created a 4-person team under the direction of Victor Stello, Deputy Executive Director for Regional Operations & Generic Requirements, to complete the task.

In a memo dated February 2, 1983, Commissioner Gilinsky requested the Acting General Counsel "to prepare a written analysis of the transcripts of the lawsuit between GPU and B&W, giving particular attention to the information which could affect the Commission's [TMI-1 (Restart)] decision..." Four questions were posed in the February 2 memo. It was -- and remains -- my view that the Gilinsky request for a written analysis of the lawsuit transcripts required a review that duplicated that being performed by the NRC staff review team. Thus, I wrote a memo to Commissioners on February 10 in which I proposed that the review team be asked to cover the Gilinsky questions. A Commission majority approved that proposal.

In a memo dated February 25, 1983, I proposed an enlargement of the transcript review process under which the Commission would request comments on the staff review team's analysis of the transcripts, and then have the Offices of General Counsel and Policy Evaluation conduct an independent review of the analysis and comments and provide recommendations to the Commission. This proposal was also approved by a Commission majority.

About that time, I was informed that the Acting General Counsel had discussed Commissioner Gilinksy's request with him shortly after receiving it and before any other Commissioner offices had become involved. They had agreed that the most that OGC could accomplish, within the constraints of OGC resources and expertise and the Commissioner's desire to have the review completed within about one month, was a summary of the trial transcript. This is, of course, less than that which Commissioner Gilinsky had requested in his February 2 memo. I was also informed that this lesser task would take one OGC lawyer approximately one month to complete. (In this connection, OGC has prepared a summary of the record on points pertinent to its review including the points raised by Commissioner Gilinsky. This summary has been provided to all Commissioners.)

Also on March 2, 1983, Commissioner Gilinsky wrote a memo to the Chairman in which he characterized the Commission's decision as "illegal," "intellectually indefensible," and "censorship." Thus, on March 9, I requested the General Counsel to provide an assessment of the legality of the Commission's actions. The General Counsel's response, submitted to us on March 25, canvassed the applicable law and concluded that the Commission's action was authorized by the Energy Reorganization Act and the Reorganization Plan. The General Counsel wrote:

> The request by Commissioner Gilinsky for an OGC review of the GPU v. B&W transcript entails a review of 47 volumes of transcript, totalling over 7,000 pages, which by itself would be incomplete in view of the approximately 13,000 pages of exhibits, some of which are depositions adding additional testimony. A parallel review

> of the same transcript is also under way by EDO staff.
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> * * * * *
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> The legislative history of the Reorganization Plan is quite clear that the Commission itself is to exercise preeminent authority in this area and that the right of individual Commissioners is qualified or limited. In this area, as stated in the House Report, "in the case of disagreement...as to the need or value of such a request in relation to staff effort or the time in which it is required, the issue shall be resolved by the Commission."
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> * * * * *
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> Commission supervisory authority entails a preeminent Commission role in fostering the orderly assignment of work and the establishment of priorities. This would include decisions on which projects or tasks should be performed by Commission level offices, such as OGC, as opposed to EDO staff offices.
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> * * * * *

The NRC review team submitted its report on March 28, 1983. The report was served on the parties to the TMI-1 (Restart) proceeding and their comments are due in the very near future. OGC and OPE will conduct their review; we expect their report in early May, well before a final Commission decision on restart of TMI-1.

I believe that the facts do not support Commissioner Gilinsky's assertion that he has been denied access to information. Further, the facts show that we performed our responsibilities under the Reorganization Plan and the Energy Reorganization Act. If Commissioner Gilinsky's view of those responsibilities were accepted, it would not be possible for me or the Commission to manage the agency's business as I believe Congress intended. Commissioner Gilinsky's view is a return to pre-TMI-2 procedures -- procedures which were soundly criticized and the object of reform.

As a final matter, I must address Commissioner Gilinsky's statement that I forwarded his question "to an office which could be counted on to produce a more predictable response than the General Counsel." If what was meant by that statement is that the response would be prepared by the members of the agency most knowledgeable about TMI-2, then I accept it. I also accept that three NRC persons with technical backgrounds would more predictably provide a useful product than one lawyer working for one month. However, I do not accept the implication that the review effort did not bring good faith objectivity to the task.

We hope this explanation and statement of facts put to rest the issues raised in Commissioner Gilinsky's April 7 letter. Commissioner Asselstine strongly disagrees with this letter and with the Commission majority's decision in this matter. His views will follow under separate cover.

Sincerely,

Nunzio J Palladino

Nunzio J. Palladino

cc: Rep. Manuel Lujan

QUESTION 52. c. Additional Views of Commissioner Gilinsky

The staff's report -- which consists largely of quotations from prior reports and contains not a single citation to the transcript in *GPU v. B&W* -- is the best evidence of this conflict of interest.

QUESTION 53: When will NRC promulgate detailed regulations for engineering LLW facilities above or below ground?

ANSWER:

These two questions are interrelated. The current types and quantities of commercial low-level waste which are not acceptable for routine shallow land burial are a small percentage of the total volume of commercial low-level waste generated on an annual basis.

Most of these wastes may be acceptable for disposal at commercial low-level waste disposal sites provided special disposal arrangements are made. Accordingly, NRC is developing criteria and methods for analyzing such wastes and determining the special disposal arrangements which would be required to permit evaluation on a case-by-case basis in accordance with Section 61.58 of 10 CFR Part 61. This effort is scheduled for completion by the beginning of FY 1985.

If warranted based on experience in developing and applying such case-by-case evaluations, amendments to 10 CFR Part 61 for alternative disposal methods would be completed during FY 1987.

QUESTION 54: What is the viability of volume reduction plus deep geological disposal of LLW?

ANSWER:

Reducing the volume of LLW and subsequent deep geological disposal would not be generally viable. The types of low-level wastes that can be reduced in volume using present technology (e.g., compaction and incineration) contain sufficiently low concentrations of radionuclides that even with volume reduction most such wastes would still be acceptable for routine shallow land disposal. Thus, the more expensive deep geologic disposal of such wastes would not be necessary.

Question 55. Onsite storage (of low-level radioactive waste) is not a permanent solution, but it could help, and we are doing it with spent fuel which is much more hazardous. Why doesn't NRC help develop this option?

ANSWER.

NRC recognized the need by nuclear power reactor licensees to provide for additional onsite storage of low-level radioactive wastes generated onsite and, in November 1981, issued Generic Letter 81-38 advising licensees and applicants of the practices that would be used in reviewing and approving additional storage capacity. The Letter also contained radiological safety guidance for the design and operation of interim contingency low-level waste storage facilities.

NRC believes that the provisions for added capacity should be used for only interim contingency storage so as not to hinder the establishment of additional disposal capacity by the states, as required by the "Low-Level Radioactive Waste Policy Act" of 1980. These provisions, consistent with NRC regulatory safety requirements, permit necessary operational flexibility by licensees.

QUESTION 56: When will NRC have detailed regulations for low-level waste that is too hazardous for shallow land burial?

ANSWER:

These two questions are interrelated. The current types and quantities of commercial low-level waste which are not acceptable for routine shallow land burial are a small percentage of the total volume of commercial low-level waste generated on an annual basis.

Most of these wastes may be acceptable for disposal at commercial low-level waste disposal sites provided special disposal arrangements are made. Accordingly, NRC is developing criteria and methods for analyzing such wastes and determining the special disposal arrangements which would be required to permit evaluation on a case-by-case basis in accordance with Section 61.58 of 10 CFR Part 61. This effort is scheduled for completion by the beginning of FY 1985.

If warranted based on experience in developing and applying such case-by-case evaluations, amendments to 10 CFR Part 61 for alternative disposal methods would be completed during FY 1987.

QUESTION 57: Why doesn't NRC encourage leachate collection systems in shallow land burial sites to make sure that there will be no contamination of ground water?

ANSWER:

Leachate collection systems represent a long-term commitment to active maintenance of the disposal facility. The active maintenance would include collection, treatment and disposal of the leachate or its residues, as well as operation and repair of the equipment used for these purposes. Instead, 10 CFR Part 61 (§61.44) states that, "the disposal facility must be sited, designed, used, operated and closed to achieve long-term stability of the disposal site and to eliminate to the extent practicable the need for ongoing active maintenance of the disposal site following closure so that only surveillance, monitoring, or minor custodial care are required." The NRC has determined that LLW disposal facilities can be sited, operated and closed in such a fashion that wastes that migrate to ground water will not exceed environmental limits for public health and safety. Accordingly, NRC has concluded that leachate collection systems are not only not required, but are undesirable.

QUESTION 58: What new facts about the causes of the Three Mile Island Accident have emerged from the record and discovery in the recent General Public Utilities/Babcock and Wilcox trial?

QUESTION 59: If new information was discovered, why did the Commission not previously have that information?

ANSWER:

The review team concluded that the trial court record did not contain information that significantly affected the NRC's understanding of the accident, including but not limited to the sequence of events. A copy of the report of this review is attached.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

March 28, 1983

MEMORANDUM FOR: Chairman Palladino
Commissioner Gilinsky
Commissioner Ahearne
Commissioner Roberts
Commissioner Asselstine

FROM: William J. Dircks
Executive Director for Operations

SUBJECT: REVIEW OF B&W-GPU TRIAL COURT RECORD

On December 29, 1982, the Chairman requested that knowledgeable staff review the record then being developed in the B&W-GPU lawsuit and to advise the Commission whether the NRC's understanding of the TMI-2 accident, including but not limited to the sequence of events, is significantly affected. Subsequently, the team reviewing the trial court record was requested to give particular attention in its review to information which could affect the Commission's decision on whether to allow TMI-1 to resume operation.

The team has completed its review. The team's report is enclosed.

William J. Dircks
Executive Director
for Operations

Enclosure:
As Stated

cc: SECY

REPORT OF THE REVIEW OF THE BABCOCK AND WILCOX - GENERAL PUBLIC UTILITIES LAWSUIT TRIAL COURT RECORD

OVERVIEW

This review of the Babcock and Wilcox (B&W) and General Public Utilities (GPU) lawsuit trial court record was initiated to determine if information was presented that significantly affected the NRC's understanding of the accident at Three Mile Island Unit 2 (TMI-2) on March 28, 1979. The review team examining the trial court record concluded that the record does not contain information which significantly affects NRC's understanding of the accident, including but not limited to the sequence of events. The review team also concluded that the record does not contain significant information that would affect the Commission's decision regarding restart at Three Mile Island Unit 1 (TMI-1), other than the potentially significant information concerning the adequacy of small-break loss-of-coolant and natural circulation procedures. This information has been reviewed by NRR and a Board Notification has been issued.

I. INTRODUCTION

By his memorandum of December 29, 1982, the Chairman of the Commission requested that the EDO have knowledgeable staff review the B&W-GPU trial court record and to advise the Commission whether the agency's understanding of the accident, including but not limited to the sequence of events, is significantly affected. In response to that memorandum, a review team was assembled under the direction of the Deputy Executive Director for Regional Operations and Generic Requirements. The Office of the Executive Legal Director provided legal advice and assistance to the review team.

The team assembled and reviewed the trial court record. This record was comprised of approximately 7400 pages of testimony and 478 exhibits. The team examined the record to determine if significant new information was presented that changed NRC's understanding of the accident. During this process, the team referred to some of the reports of previous investigations into the accident at TMI-2 on March 28, 1979. The team concluded that the trial court record did not contain significant new information that changed NRC's understanding of the accident.[1] In the midst of the trial on January 24, 1983, B&W and GPU jointly announced that they had settled the lawsuit. Nonetheless, the trial court record accumulated until that time was substantial and consequently the review of the trial court record went forward. The team's findings in this area are presented in Section II of this report.

Subsequent to the initiation of the review team effort, the Chairman requested that the review team advise the Commission whether or not the trial court record contains any significant information that might affect the Commission's decision regarding the restart of TMI-1. The team's findings in this area are presented in Section III of this report. The team's effort in this area included consideration of questions raised by Commissioner Gilinsky in his memorandum to the Acting General Counsel dated February 2, 1983.

Should the reader of this report review the trial court record itself, the review team would offer the following words of caution.

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1. Although the review team concluded that the trial court record does not contain significant new information, there is new information contained in this record. The TMI Management Audit Report conducted by Metropolitan Edison Company in February 1978 is an example of new information.

First, the accident at Three Mile Island is a unique event in the degree to which it has received formal scrutiny. The accident has been studied by this agency in NUREG-0600 [2], NUREG-0760 [3], the NRC Special Inquiry Group (NUREG/CR-1250) [4], and by the President's Commission [5], the Electric Power Research Institute's (EPRI's) Nuclear Safety Analysis Center (NSAC) [6], the U.S. Senate [7], the U.S. House of Representatives [8], and the State of Pennsylvania [9]. The information amassed in these and other studies and in the TMI-1 Restart Proceeding substantially exceeds the information presented in the trial court record.

This is understandable because the various studies of the accident had as their goal an objective and comprehensive examination of the accident. This is a far broader goal than the goal of this litigation, which was essentially to assess blame for the accident. Consequently, the trial court record presents an incomplete picture of the accident. To adequately understand the accident and to properly assess the trial court record, one must look beyond the trial court record and understand the accident as a whole.

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2. "Investigation Into the March 28, 1979 Three Mile Island Accident by the Office of Inspection and Enforcement" published in August 1979.

3. "Investigation Into Information Flow During the Accident at Three Mile Island" published in January 1981.

4. "Three Mile Island, A Report to the Commissioners and to the Public" published in January 1980.

5. "Report of the President's Commission on the Accident at Three Mile Island" published in October 1979.

6. "Analysis of Three Mile Island Unit 2 Accident" NSAC-80-1 revised March 1980.

7. "Report to the United States Senate Nuclear Accident and Recovery at Three Mile Island A Special Investigation," Subcommittee on Nuclear Regulation for the Senate Committee on Environmental and Public Works published in 1980.

8. "Accident at the Three Mile Island Nuclear Power Plant," Oversight Hearings Before a Task Force of the Subcommittee on Energy and the Environment of the Committee on Interior and Insular Affairs, House of Representatives published in 1979.

9. "Report of the Governor's Commission on Three Mile Island" published February 26, 1980.

Second, even in areas in which the trial court record is extensive, such as tailpipe temperatures, the trial court record is incomplete. Consequently, even to assess issues litigated extensively, the reader will still need to look beyond the trial court record. This is made even more true in this litigation because it was settled in mid-trial.

When examining the trial court record, the review team was aware that the total number of exhibits developed during the litigation exceeded those admitted into the trial record. In addition, many of the depositions taken to prepare for trial were not part of the trial record. In many instances where depositions were used at trial, only excerpts were introduced into evidence.

The review team did not examine these supplemental documents [10]. The examination of these supplemental documents would have constituted a substantial undertaking--equivalent or greater than the examination of the trial court record itself. Although such an effort might have been warranted had any significant new information surfaced regarding TMI, the examination of the trial court record revealed no new significant information affecting TMI [11]. In the absence of any indication that the additional substantial effort of examining the supplemental documents would add anything significant to NRC's knowledge concerning the TMI-2 accident or TMI-1 restart, the effort was not undertaken.

It should be noted that the entire GPU case had been presented at trial before the lawsuit was settled. GPU presumably presented its "best" issues and B&W had a full opportunity to respond to these issues. This adjudicating process would tend to surface any significant new information. Furthermore, the supplemental documents assembled for trial were likely closely scrutinized by both B&W and GPU in preparation for trial. NRC reporting requirements apply to both B&W and GPU and they would be required to report any significant new safety information that might have been uncovered. Finally, the events surrounding the accident at TMI-2 have received close scrutiny by a number of investigative teams and by adjuditory board, of this agency. One must have a certain degree of confidence that these efforts have developed an adequate record of events for this agency to make decisions. The lack of any significant new information in the trial court record bears out this presumption of confidence.

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[10] GPU offered to make all of the exhibits and depositions developed during the litigation available for the review team. See Appendix A.

[11] In the single area in which a potentially significant problem was identified (i.e., small-break loss-of-coolant and natural circulation procedures), it has been found that the TMI-1 procedures have been modified following the accident at TMI-2 to preclude the problem. See further discussion of this subject at pp. 16-17.

II. THE AGENCY'S UNDERSTANDING OF THE ACCIDENT AT TMI-2

The agency's understanding of the TMI-2 accident is essentially set forth in three prime documents. The first is the NRC Special Inquiry Group (SIG) investigation report. The principal objectives of this investigation were to determine what happened during the accident and why, to assess the actions of the utility and NRC personnel before and during the accident, and to identify deficiencies and areas where further investigation might be warranted.

The second document is NUREG-0600. There the facts concerning the events of the accident at TMI-2 were comprehensively examined and the performance of Metropolitan Edison Company (Met Ed, the licensee) was evaluated. The investigation culminated in the issuance to the licensee of a Notice of Violation with associated civil penalties.

The third document is NUREG-0760. There the transfer of information among individuals and agencies was analyzed to ascertain what knowledge was held by various individuals of the specific events, parameters, and systems during the accident at TMI-2. The following conclusions were reached in NUREG-0760 at pp. 10-11:

1. There was significant information that did not adequately flow either on the site or to the necessary offsite groups on the day of the accident.

2. On the day of the accident, an effective system did not exist to ensure adequate information flow; i.e., to provide significant information for dissemination and evaluation within the onsite organization or offsite within the Met Ed and GPU organizations as well as the NRC, Commonwealth of Pennsylvania, and other agencies.

3. Those individuals on site failed to understand the extent and significance of the problems confronting them on the day of the accident; this contributed to the inadequate flow of information.

4. Met Ed was not fully forthcoming on March 28, 1979 in that they did not appraise the Commonwealth of Pennsylvania of either the uncertainty concerning the adequacy of core cooling or the potential for degradation of plant conditions.

5. Information was not intentionally withheld from the State on the day of the accident.

6. Information was not intentionally withheld from the NRC on the day of the accident.

7. The NRC did not have an effective system to ensure that information was properly accumulated, evaluated, and disseminated.

8. Reporting requirements, both to NRC and to the State, were not sufficiently specific on March 28, 1979.

This investigation culminated in the issuance of another Notice of Violation to the licensee.

The Special Inquiry Group (SIG) report, NUREG-0600, NUREG-0760, the information supporting these three studies, and the associated enforcement actions provide an overall baseline of this agency's understanding of the accident at TMI-2, including the sequence of events. The baseline for this review is enhanced by the cumulative knowledge and familiarity of the review team members of the events surrounding the accident at TMI-2. This has resulted from long association with those events including participation in previous investigations of the accident. Specifically, the team leader participated extensively in the development of NUREG-0600 and all team members participated in the development of NUREG-0760.

With regard to the day of the accident, the trial focused on events between 4:00 a.m. and approximately 6:20 a.m. The review team has concluded that the agency's understanding of the accident at TMI-2, including but not limited to the sequence of events, is not significantly affected by the trial court record. The review of the record does lead to additional appreciation of factors contributing to the operator's confusion within this time frame. Specifically, insight was gained concerning the influence on the operators of concerns for recriticality and leaks in the B steam generator, and the discovery by the control room operators that the emergency feedwater valves were shut during the early minutes of the accident. Previous NRC investigations into the accident have concluded that the operators failed to understand the events that occurred on the morning of the accident. Conclusion 3 of NUREG-0760 above is one example. The information reviewed in the trial court record reinforced this conclusion.

The trial court record contains testimony that conflicts with earlier information developed on a particular subject. In some instances, the trial court testimony of one individual is at variance with testimony given by that same individual in a prior inquiry examining the accident. Such variations can be considered significant in two regards. First, do the variations alter the technical understanding or the sequence events of the accident? The review team has found no variations that would affect its technical understanding of the accident, or the sequence of events.

Second, variations can also call into question the integrity of an individual. A "variation" suggests that either the original information or the subsequent information was a lie. This subject of variations and conflicts in information provided by individuals regarding the accident was specifically addressed in NUREG-0760. That investigation concluded that, in some cases, the accumulated information contained apparent conflicts concerning the knowledge of individuals about specific information. It was concluded there that none of the conflicts examined was the result of lying. Other possible explanations for variations identified in NUREG-0760 included poor recall, different statements by an individual on the same subject as a result of a slightly differently worded question, the inability of an individual to differentiate between what was known on March 28, 1979 and knowledge gained later, and the effect of elapsed time. As in NUREG-0760, the review team did not attempt to assign a specific cause for each of the variations noted. The review team did conclude that none of the variations examined were the result of lying.

Instances of apparent conflict in the trial court record include information concerning high pressure injection (HPI) initiation at about 5:41 a.m., identification and interpretation of tailpipe temperatures during the early morning and the potential influence of precursor events on events occurring during the day of the accident. These conflicts are not new and have been discussed in previous investigations. These issues are discussed below.

Alleged Initiation of High Pressure Injection (HPI) at Approximately 5:41 a.m. on the Day of the Accident

The trial court record contains a lengthy discussion of whether or not HPI was fully initiated (makeup pumps 1A and 1C operating and injecting about 1000 gallons per minute) at approximately 5:41 a.m. on the day of the accident. This topic is not new and, as discussed below, has been examined during previous investigations into the accident. There is a discrepancy concerning this topic between the GPU sequence of events (which states HPI was fully actuated at 5:41 a.m.) and the sequences contained in other investigations (which state HPI was not fully actuated at 5:41 a.m.).

The GPU sequence contains the following entry at pp. 41-42 that was based soley on operator interviews:

> 0541:37 (approximate) The operator manually initiated the Safety Injection portion of Engineered Safety Feature Trains A and B to supply additional cooling water to the core. Makeup Pump C started automatically. Makeup Pumps A and C are now operating.

During the trial, GPU presented an analysis prepared by EDS Nuclear Inc. (GPU Exhibit No, 2223) and the expert testimony of Dr. James Holderness that concluded that the GPU sequence of events was incorrect. The EDS analysis examined makeup tank level behavior and its relationship to HPI initiation. The analysis used two computer modeling techniques to determine if conclusions could be drawn based on this relationship. The analysis verified that it is possible to determine whether or not HPI was initiated based upon makeup tank level response. Based on this analysis, GPU asserted that HPI was not, and could not have been, fully initiated at approximately 5:41 a.m. on March 28, 1979.

Additionally, two operators whose earlier statements formed the basis for the 5:41 a.m. HPI entry in the GPU sequence testified during the trial. William Zewe testified that he does not remember HPI being fully initiated at about 5:41 a.m. on March 28, 1979, even though his earlier statements are to the contrary. Another operator, Edward Frederick, testified during the trial that he does not recall ever having said that HPI was initiated at the same time the second set of reactor coolant pumps were secured, nor does he recall that HPI was initiated in that time frame.

The third operator involved was Craig Faust. Faust did not testify during the trial. Rather, an earlier interview was read into the record. In this interview, conducted by IE on April 21, 1979, Faust stated "Something else I would like to just emphasize is that just prior to stopping those pumps, we did reinitiate, we hit high pressure injection just prior to stopping the pumps." He also stated in this IE interview that Frederick was the operator who manually initiated the engineered safety features (ESF) resulting in two HPI pumps automatically starting at a flow rate of 1,000 gallons per minute.

To summarize, Faust recalled that Frederick initiated HPI at approximately 5:41 a.m. Frederick stated that he does not recall HPI actuation in this time period. Zewe's earlier recollection was that Faust initiated HPI. However, Zewe does not now believe that it was initiated at approximately 5:41 a.m.

During the trial, B&W maintained that the GPU sequence of events was correct. B&W reviewed the earlier statements of Zewe which reflect his recollection that HPI was initiated at approximately 5:41 a.m.

The conflict between the GPU sequence of events (SOE) and other sequences (which do not reflect HPI actuation of 5:41 a.m.) has been examined in previous investigations and was identified in the report prepared by EPRI's Nuclear Safety Analysis Center. This report states in Appendix SOE that:

> A manually initiated actuation of the high pressure injection portion of the engineered safety features at approximately 5:41 a.m. was noted in the latest GPU SOE. This occurred at a time when the computer alarm history was lost, so it cannot be verified. The entry was based on two separate interviews of one control room operator. A review of those interviews indicates that there may

> have been a manual actuation about the time the reactor coolant pumps were shut down, but this actuation does not appear to be certain enough to be considered factual.

The NRC Special Inquiry Group (SIG) also examined the operation of HPI at approximately 5:41 a.m. This report concluded at p. 665 of Vol. II, part 2, that the SIG review disproved the entry in the GPU sequence that stated makeup pump 1C had been started.

The U.S. Senate report states at p. 105:

> At 5:41 a.m., still unaware that a LOCA was in progress, the control room personnel took a critical step. They shut down the last two reactor coolant pumps, which also were vibrating excessively. (Reference omitted.) This ended the forced flow of cooling water through the core. So long as the pumps had been running, the combination of water and steam flowing through the core removed enough heat to protect it even though coolant was being lost. (Reference omitted.) Once the pumps were stopped, the steam separated from the water and rose to the top of the hotlegs--the so-called "candy canes"--and the water level in the reactor vessel dropped.
>
> The uncovering of the core began very soon after circulation stopped. Water was continuing to escape out the PORV, at the same time that HPI was being throttled, so that the lost coolant was not being replaced. The water level continued to decline, temperatures to increase, the coolant to boil. Not only did the boiling release saturated steam, which continued to rise toward the higher portions of the system, such as the hotlegs, but the steam displaced more coolant forcing it into the pressurizer and out the PORV. This process would continue to uncover the core.

The NRC's initial investigation into the accident (NUREG-0600) also examined the operation of HPI on the morning of the accident. This report states at p. I-4-22 that:

> Only 15,000 gallons of water were injected into the reactor from the BWST during the first 3½ hours, approximately 2/3 of it during two HPI actuations. As indicated in Section 4.3.1, the overall average flow for this period was 70 gpm. However, during most of this time the flow was much less. During the first minute of the accident, the operators started MUP-1A and opened MU-V-16B. This was followed by ES initiation at 2 minutes, which was throttled back at 4 minutes. (Reference omitted.) Thus, the net flow during the first 4 minutes was about 3,000 gallons. At 0720 hrs, ES was initiated and maintained for 7 minutes, resulting in a flow rate of 1,000 gpm for a total injection of 7,000 gallons. The remaining 5,000 gallons injected during the period from 0404 hrs until 0720

hrs, when ES was not actuated, results in an average net flow rate of about 25 gpm for that period.

The findings of the Senate investigation and the NUREG-0600 inventory balance lend additional evidence to support the NSAC and SIG conclusion that HPI was not fully initiated between 4:04 and 6:18 a.m.

The review team concludes that the NRC's understanding of the accident is not significantly affected by the information presented in the trial court record related to the alleged HPI operation at 5:41 a.m. The issue has previously been examined and the evidence presented during the trial reinforces earlier conclusions that HPI was not initiated at 5:41 a.m. Further, the review team concludes that HPI was not fully initiated at approximately 5:41 a.m.

It should be noted that the operator's recollections that HPI was manually initiated after a reactor coolant pump was stopped is consistent with the events that occurred at approximately 7:15 a.m. The 2B reactor coolant pump was run from approximately 6:55 a.m. until 7:13 a.m. HPI was manually initiated resulting in makeup pump 1C starting automatically (makeup pumps 1A and 1C were then operating) at approximately 7:20 a.m.

Consideration Given to Tailpipe Temperatures on the Day of the Accident.

Power operated relief valve (PORV) and code safety valve tailpipe temperatures have been examined extensively in previous investigations of the accident. The trial court record provides no new information that significantly affects the agency's understanding of this element of the accident.

The trial court record is consistent with NRC's previous understanding in that:

- Tailpipe temperatures observed by the operators were considerably less than the temperatures they expected with a PORV or code safety valve stuck open. Brian Mehler, who entered the control room shortly after 6 a.m., read out the tailpipe temperatures and closed the PORV block valve. However, Mehler also has testified that he believed the tailpipe temperatures with an open PORV would be greater than 300°F.
- The operators' evaluation of the tailpipe temperatures was influenced by the prolonged elevated temperatures prior to the accident.
- The operators believed that the elevated temperatures prior to the accident were a result of valve seat leakage.

- The operators believed that the elevated conditions following the trip were a result of the PORV cycling during the transient, and thus the operators did not use the pressurizer system failed emergency procedure.

This record, like the previous record developed on the subject of tailpipe temperatures, is unable to resolve differences between Zewe and Kenneth Bryan regarding the tailpipe temperatures read in the control room the morning of the accident. One new piece of information provides insight into the operators' inability to identify from tailpipe temperatures which valve was leaking prior to the accident. This is given in GPU Exhibit No. 399. In a presentation by John M. MacMillan (B&W) to the ACRS on April 16, 1979, MacMillan stated that B&W expected in the near term to recommend certain design improvements to improve operator performance during transients similar to the one the occurred on the day of the accident. One design improvement specifically identified was a more positive indication of PORV position. B&W had completed an effort to identify possible methods of detecting PORV status based on various process variables and noncontact methods. GPU Exhibit No. 399 summarizes B&W's investigative efforts, identifies several methods considered to have a high probability of success and recommends a test to confirm the workability of the proposed methods. It was concluded for the "temperature only" method of determining PORV position that:

- It may not be possible to tell leakage from normal operation.
- It may be difficult or impossible to set a threshold temperature for the identification of leakage.
- This method would not distinguish between leakage from the PORV and the code safety valves.

The questionable validity of relying on tailpipe temperatures as an indication of valve position is reinforced by the NRC's requirements in this area as a result of "Lessons Learned" from TMI. The staff required (NUREG-0660 and NUREG-0737, Item II.D.3) that reactor coolant system relief and safety valves be provided with a positive indication in the control room derived from a reliable valve position detection device or a reliable indication of flow in the discharge pipe. The staff found, as did B&W above, that tailpipe temperature (as a sole indication) was not a reliable measure of valve position indication.

The Influence of Precursor Events at Both Davis-Besse and TMI-2 on the Events Occurring on the Day of the Accident.

As in previous inquiries into the accident, the trial court record contains a discussion of several events that were described as precursors of the accident at TMI-2 [12]. None of the events discussed during the trial are new. Although there are reports or records associated with various events that were new to this review team, the team concludes that no information was presented that significantly changes the NRC's understanding of the accident. Rather, a review of this portion of the trial court record reinforces conclusions reached in previous investigations. Previous investigations have concluded that the precursor events were generally not well understood by vendors, utilities or NRC. In those instances where a precursor was understood by an individual, this understanding did not reach the operating personnel of B&W reactors and consequently did not place them in a position to respond differently to events such as those that occurred at TMI-2.

The Special Inquiry Group (SIG) in its discussion of how the nuclear industry and the NRC viewed precursor events stated at p. 130 of Vol. II, part 1, that:

> The nuclear industry and the NRC had little or no concern about what the operators saw during a transient and what they did as a result. Actual plant operating and emergency procedures were not reviewed in any systematic fashion by the NRC or by the vendor. Incidents were assessed almost entirely from the perspective of the hardware with little concern about what the operator saw or did.

The Senate Investigation also examined the manner in which the nuclear industry and the NRC responded to precursor events. This report found at p. 18 that:

> a. Three Mile Island was not the first nuclear facility to experience the conditions that occurred in the early stages of the March 28, 1979 accident. Important information had been available to the reactor-designer of TMI and to the NRC on minor accidents at two other plants--Oconee in South Carolina and Davis-Besse in Ohio (footnote omitted) that were similar to the beginning of the TMI accident.
>
> b. Both the reactor-vendor, Babcock & Wilcox (B&W), and the NRC had programs for evaluating and acting upon individual problems occurring at nuclear power plants. However, the responses of the reactor-vendor and the NRC to these similar accidents suggest that neither had procedures to assure an effective systematic review and analysis of potentially recurring problems. (Footnote omitted.) For these reasons, TMI control room personnel did not have the benefit of

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[12] The precursor events are listed in Appendix B as well as an identification of other reports wherein they are discussed.

> analysis and guidance, based on similar accidents, that would have helped them in diagnosing and responding correctly to the early events of the accident on March 28. (Footnote omitted.)
>
> The deficiencies in industry and NRC programs for evaluating and acting on operating experience at nuclear power plants were among the most important inadequacies in the nuclear safety program brought to light by the accident.

The President's Commission into the accident reached similar conclusions concerning precursor events (see Commission Finding 7, p. 29). In addition, the President's Commission Recommendations addressed operator training related to operating experience and industry analysis of operating experience. The recommendations concerning training are stated at p. 70:

> Training should not end when operators are given their licenses.
>
> a. Comprehensive ongoing training must be given on a regular basis to maintain operators' level of knowledge.
>
> b. Such training must be continuously integrated with operating experience.

The recommendation concerning the utility and its suppliers stated is at p. 68:

> There must be a systematic gathering, review, and analysis of operating experience at all nuclear power plants coupled with an industry-wide international communications network to facilitate the speedy flow of this information to affected parties. If such experiences indicate the need for modifications in design or operation, such changes should be implemented according to realistic deadlines.

The SIG investigation also reviewed the relevance of precursor events to the accident at TMI-2. Although the review of precursor events does provides insight into underlying causes of the accident, there is considerable doubt as to how knowledge and understanding of these prior events would have affected the accident at TMI-2. The SIG investigation examined this aspect. This report posed the following questions and answers concerning the relevance of precursor events at p. 138 of Vol. II, part 1:

> Two issues can be considered with respect to the handling of precursor events. First, if lessons had been learned and applied, how might the actual accident at TMI been reduced or avoided; and second, how does the handling of a precursor reflect on the overall performance of the utility-vendor-regulatory system.

The first issue is itself made up of two questions

- Should additional guidance or information have been made available to the operators if a certain precursor had been handled differently?
- Would the operators at TMI have responded differently during the Accident on the basis of that guidance or information?

The answer to the first question is certainly, yes. Precursors such as the Kelly-Dunn memoranda or the Michelson report should have produced guidance that if it had been used, would have prevented the extensive core damage that occurred at TMI.

Unfortunately the answer to the second question can never be known for certain. It is impossible to determine if one additional piece of information integrated with the massive amount of data already available to the operators at TMI would have caused them to diagnose the problem properly and take appropriate actions to prevent the severe consequences that occurred. However, when one looks at the fact that the massive amount of significant, meaningful information that should have indicated the TMI operators that the actions being taken were incorrect, and one realizes that this bulk of information was essentially ignored one must conclude that any additional guidance produced as a result of any of the identified precursors might have been equally ignored.

This conclusion does not, however, detract from the fact that the second issue, how the precursors were handled by the licensee-vendor system, is inherently significant.

Finally, although not a precursor, an issue was examined during the trial that is related to Met Ed's knowledge of the Davis-Besse event.

A portion of the trial court record is devoted to a discussion of the B&W Users' Group meetings sponsored by B&W and attended by various utilities using B&W nuclear steam supply systems. At such Users' Group meetings, B&W would disseminate information to its customers concerning its products. Also, the various users of B&W nuclear steam supply systems would relate their experiences to the group. The meetings constituted basically an information exchange. A number of Users' Group meetings were held in the years prior to the accident at TMI-2. At trial, B&W attempted to demonstrate that information regarding the Davis-Besse transient of September 24, 1977, which involved a stuck-open PORV and a resulting high pressurizer level and premature operator termination of HPI, was disseminated to attendees including Met Ed personnel at the November 16-17, 1977, Users' Group meeting by Terry Murray, Superintendent of the Davis-Besse plant. Although a number of Users' Group meetings occurred prior to the accident, B&W claimed that it was only at the November 16-17, 1977, Users' Group meeting that information was provided to GPU (specifically to Messrs. Miller and O'Hanlon) with regard to the Davis-Besse incident [13].

In support of its argument, B&W sponsored the testimony and notes of Frank Fahland, an employee of B&W who attended the Users' Group meeting in November 1977 as a nonparticipant. Although Fahland testified that he had no independent recollection of the presentation of Murray at the meeting in question, he indicated that he prepared notes of the Users' Group meeting covering the presentation of Murray. Fahland's notes contain brief entries regarding Murray's discussion of the Davis-Besse transient. Fahland's notes indicate that the incident consisted of a steam feed rupture control system failure eventually leading to rupture disc failure on the quench tank caused by the PORV sticking open. His notes further reflect that the pressurizer level indication was reading full and that system pressure went to saturated conditions.

Fahland's notes are also pertinent for the information that they do not contain regarding the September 1977 transient. Fahland did not make note of the primary cause of the PORV failure: part of the control circuit for the valve was not installed. This resulted in rapid cycling of the PORV before it failed. He did not note that low reactor coolant system pressure resulted in actuation of the emergency core cooling system (ECCS) including HPI. Nor did he note that HPI had been terminated in violation of procedures before system pressure had recovered. In addition, reactor power level and other initial conditions pertinent to the transient were not noted.

GPU sponsored the testimony of James O'Hanlon on this subject. O'Hanlon, a former Met Ed employee, attended the meeting with Gary Miller and took notes. His notes reflect no discussion of the Davis-Besse transient. O'Hanlon testified that he did have an independent recollection of the Murray presentation and that, regardless of the Fahland notes, there was no discussion of pressure going to saturation conditions with the PORV open and pressurizer level going up.

The record thus contains apparent conflicting testimony as to what information was disseminated at the November 1977 meeting. It should be noted that Fahland has no independent recollection of the meeting and his notes may contain some of his own thoughts. The official B&W minutes of the meeting noted only that, during the Davis-Besse transient, the PORV stuck open. James Seelinger testified that he and Miller had made a search of the Met-Ed files to look for information related to the Davis-Besse transient. The search revealed only a

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13. At that time, Miller was the Station Superintendent and O'Hanlon was the Superintendent of Unit-1 at the TMI facility.

one-line statement concerning the Davis-Besse transient commenting on PORV failure. It should be further noted that Murray, who made the presentation at the Users' Group meeting, did not offer testimony for either party on this point.

As with the precursor events in general, it may be that any information that may have been presented at the November 1977 meeting was insufficient, standing alone, to cause the listener to capture the true significance and implications of the Davis-Besse transient of September 1977. The review team concludes that, during the November 1977 meeting, Murray made a presentation that included a brief discussion of the Davis-Besse transient. The review team further concludes that the information presented by Murray was not sufficient to permit a thorough understanding of the significance of the transient or its implications. This conclusion is supported by the testimony of Metropolitan Edison and B&W personnel as well as the official B&W minutes of the meeting. However, this issue cannot be conclusively resolved in the absence of Murray's testimony.

In conclusion, the review of the trial court record requested by the Commission reveals no significant information that affects NRC's understanding of the accident.

III. SIGNIFICANT INFORMATION BEARING ON THE RESTART OF THE TMI-1 FACILITY

Subsequent to the initiation of the review team effort, the Commission requested that the review team analyze the trial court record for any significant information that might affect the Commission's decision regarding the restart of TMI-1. It should be noted that GPU has made numerous changes to the equipment and organizational systems at TMI-1 in preparation for restart. Many changes have been required and reviewed by the NRC. The trial court record did not examine these changes. The information in the trial court record does not focus on events that took place after approximately 6:20 a.m. on March 28, 1979. Therefore, the information presented during the lawsuit has limited impact on restart.

The review team reviewed the trial court record for significant information bearing on the restart of the TMI-1 facility. The baseline for this analysis is the same as that discussed in Section II above. It should be noted that, before this review, the team did not examine the transcripts and exhibits of the Restart Proceeding. The Licensing Board and Special Master decisions were reviewed by the team. The team is aware that the Commission has decided to permit the parties to the TMI-1 Restart Proceeding to submit, if they wish, written comments on this report. In view of the fact that the record of the Restart Proceeding was not completely analyzed by the review team, the team recommends that the Commission request the parties to the Restart Proceeding, who are intimately familiar with that record, to apprise the Commission of their views as to whether the trial court record contains significant new information.

The TMI-1 Restart Proceeding (Docket No. 50-289-SP) was initiated by the Commission's Order and Notice of Hearing dated August 9, 1979, Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit 1), CLI-79-8, 10 NRC 141 (1979). The decision as to whether or not to permit restart of TMI-1 is currently before the Commission for immediate effectiveness review.

During the review of the trial court record, one potentially significant item was identified. The item may also be applicable to other B&W reactors. This item was referred to NRR for evaluation and possible Board Notifications in accordance with NRR Office Letter No. 19, Rev. 2. NRR has reviewed this matter and has concluded that a Board Notification was appropriate. On February 18, 1983, Board Notification 83-21 was sent informing the Commission, Boards and parties of the staff's ongoing evaluation of two concerns raised during the testimony of Dr. R. Lahey of the Rensselaer Polytechnic Institute (RPI) and Dr. G. Wallis of Dartmouth College[14].

The first concern involves procedures and relates to whether or not the operators have sufficient instructions and training to ensure that they will raise the secondary level of the steam generator to 95 percent of the operating level under all conditions necessary to ensure natural circulation. The second concern involves recent test data that was reported to show that auxiliary feedwater entering from the sparger ring does not penetrate into the steam generator tube bundle but only contacts a small percentage of the tubes. Previous analysis models had assumed good penetration of auxiliary feedwater spray into the tube bundle. Recent B&W models may account for the new data.

On February 23, 1983, the B&W Owners' Regulatory Response Group (RRG) met with the staff to present information on these two concerns. Subsequent to this meeting, the Owners' Group submitted a technical report, "Evaluation of SBLOCA Operating Procedures and Effectiveness of Emergency Feedwater Spray for B&W Designed Operating NSSS," which documented the information presented at the February 23, 1983 meeting[15]. On March 11, 1983, Board Notification 83-21A was sent to the Commission, Boards and parties[16]. This notification provided the staff's evaluation and conclusions with respect to the two concerns previously identified in BN-83-21 for TMI-1 only. The staff concluded that the information described in BN-83-21 did not adversely affect its conclusions regarding the ability of TMI-1 to achieve and maintain decay heat removal by natural circulation through the steam generators under transient and accident conditions. On March 16, 1983, Board Notification 83-21B [17] forwarded to the Commission, Boards and parties the B&W Regulatory Response Group report. The staff completed its review of these concerns for TMI-1. Reviews for the remaining B&W plants are continuing.

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[14] Memorandum from D. G. Eisenhut, NRC, to the Commission, dated February 10, 1983, subject: "Board Notification 83-21."

[15] "Evaluation of SBLOCA Operating Procedures and Effectiveness of Emergency Feedwater Spray for B&W-Designed Operating NSSS," B&W DOC. ID. 77-1141270-00, dated February 1983.

[16] Memorandum from D. G. Eisenhut, NRC, to the Commission, dated March 11, 1983, subject: "Board Notification 83-21A."

No other significant information bearing on the restart of TMI-1 was identified.

The Memorandum For the Acting General Counsel of February 2, 1983 from Commissioner Gilinsky identified four areas which Commissioner Gilinsky sought to be evaluated for significance. These areas were:

- GPU's falsification of leak rate calculations;
- The flow of information on March 28, 1979;
- Cheating on the NRC and Company administered operator examinations; and,
- Maintenance at Three Mile Island.

A discussion of each of these areas is presented below.

GPU's Falsification of Leak Rate Calculations [18]

NRC information on this matter is incomplete. The allegations concern falsification of reactor coolant system leak rate measurements made at TMI-2 prior to the accident for purposes of Technical Specification compliance. The original NRC investigation into this matter was suspended upon referral of the matter to the United States Department of Justice (DOJ). NRC's investigative effort was suspended pending the conclusion of the DOJ investigation at the request of DOJ to avoid parallel administrative and criminal proceedings. The DOJ investigation is ongoing. The review team was briefed on this issue by one of the original NRC investigators who examined information developed before

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17. Memorandum from D. G. Eisenhut, NRC, to the Commission, dated March 16, 1983, subject: "Board Notificaiton 83-21B."

18. For an overview of the information contained in the trial court record concerning this area, refer to the references in Appendix C.

suspension of the investigation. This issue was also the subject of a Licensing Board decision.[19]

The NRC investigation conducted to date has been limited, but the information discussed in the trial court record does not add substantially to the information of which the NRC is already aware.

Flow of Information

The trial court record contains limited discussion concerning the flow of information on March 28, 1979. The record contains scattered excerpts of operator testimony that bear on this issue. The record does not contain a review of the information available or events that occurred after approximately 6:20 a.m.

The issue of the flow of information on March 28, 1979 was the specific subject of NUREG-0760, as discussed in Section II. The review team concluded that the trial court record revealed no information significantly affecting the conclusions reached in NUREG-0760 with regard to information flow.

In addition to NUREG-0760, the SIG investigation examined the issue of information flow to the NRC. The SIG report provides an overview of the issue of information flow at pp. 159-160, Vol. I:

> We undertook to determine if there was evidence of any willful failure on the part of utility personnel to provide information to the NRC in order to cover up the seriousness of the accident. A detailed account of the results of that investigation are contained in Volume II of this report.
>
> In sum, we concluded that the evidence failed to establish that Met Ed management or other personnel willfully withheld information from the NRC. There is no question that plant information conveyed from the control room to offsite organizations throughout the day was incomplete, in some instances delayed, and often colored by individual interpretations of plant status. Indeed, information conveyed by Met Ed, NRC, and B&W employees in the control room to their own managements and offsite organizations was in many cases incomplete and even inaccurate.
>
> However, based on the evidence, we could not conclude that the causes of this breakdown in information flow went beyond confusion,

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[19] The Licensing Board considered leak rates under Section K. Licensee's Management Response to the TMI-2 Accident, Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit 1), LBP-81-32, 14 NRC 381 (1981) at pp. 557-558.

> poor communications, and a failure by those in the control room, including NRC and B&W employees, to comprehend or interpret the available information, a failing shared to some extent by offsite organizations as well.
>
> A number of factors other than deliberate attempts to downgrade the seriousness of the situation could have accounted for the failure of the control room crew to communicate critical information. These include the inability to recognize and comprehend the full significance of the information, and certain psychological factors: the difficulty of accepting a completely unexpected situation, the fear of believing that the situation was as bad as the instruments suggested, and a strong desire to focus on getting the reactor stable again rather than dwelling on the severity of the accident.
>
> The failure to recognize and act on significant data in our view demonstrates a lack of technical competency by site employees to diagnose and cope with an accident. Moreover, the inability of the utility's management to comprehend the severity of the accident and communicate it to the NRC and the public was a serious failure of the company's management. But neither lack of such a capability nor the psychological factors mentioned above amount, in our view, to an intentional withholding of information.
>
> Moreover, NRC and B&W employees in the control room also did not recognize or communicate critical information. And their offsite organizations did no better, and perhaps worse, than the utility's offsite engineers at GPU in New Jersey in demanding reporting of important information and in recognizing the significance of the information that they did receive. The fact that NRC and B&W did no better than Met Ed/GPU in reporting critical information up the management chain and acting upon it tends to support our conclusion that there is no evidence to show willful withholding of information by Met-Ed from NRC.

The review team also examined the Licensing Board's decision on this matter.[20] The Board's discussion of this issue focussed in large part on NUREG-0760. The trial court record related to this issue contained no significant information affecting restart.

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[20] The Licensing Board considered information flow under Section K. Licensee's Management Response to the TMI-2 Accident, *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit 1), LBP-81-32, 14 NRC 381 (1981) at pp. 537-556.

Cheating on the NRC and Company-Administered Operator Examinations [21]

The "cheating" issue was the subject of a Special Master's decision and a Licensing Board decision in the Restart Proceeding and included the issue of the Miller letter to the NRC Staff on August 3, 1979 certifying that a licensed Met Ed operator had completed the TMI requalification program [22]. The review team examined both of these decisions. The information produced on this matter in the B&W-GPU trial court record is but a minor subset of the information presented to the Licensing Board. The trial court record contains no significant new information concerning the involvement and actions of the operator, Miller, Herbein and Arnold with regard to the requalification and certification.

Maintenance at Three Mile Island [23]

The issue of maintenance has been examined in previous investigations. This issue was also a subject that was examined by the Licensing Board in the TMI-1 Restart Proceeding [24]. The discussion of maintenance contained in the trial court record included information concerning maintenance budget and maintenance staff size in the years preceding the accident, and maintenance issues related to the PORV and code safety valves.

To supplement its understanding of the issue of maintenance, the review team examined the portion of the Licensing Board decision referenced above. The review team concludes that there is no new significant information in the trial court record related to this issue that could affect the restart of TMI-1.

IV. CONCLUSIONS

The review team concludes that the trial court record does not contain information that significantly affects the agency's understanding of the accident, including but not limited to the sequence of events.

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21. For an overview of the information contained in the trial court record concerning this area, refer to the references in Appendix C.

22. Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit 1), LBP-82-34B, 15 NRC 918 (1982); Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit 1), LBP-____, ____ NRC ____, (Slip Opinion, July 27, 1982).

23. For an overview of the information contained in the trial court record concerning this area, refer to the references in Appendix C.

24. Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit 1), LBP-81-32, 14 NRC 381 (1981) at pp. 479-504.

The review team concludes that the trial court record does not contain significant information that would affect the Commission's decision regarding restart, other than the potentially significant item of concerning the adequacy of small-break loss-of-coolant and natural circulation procedures. This information has been reviewed by NRR and a Board Notification has been made.

ADDENDUM

On March 22, 1983, the Government Accountability Project (GAP) issued a press release discussing charges made by Richard Parks, a senior startup engineer for the Bechtel Corporation at TMI-2. Parks' allegations address, in part, an issue which was discussed in the trial court record. His allegations include one which states:

> appointment to a key oversight role of the individual reported on-site as the "mystery man" who shut off the safety injection pumps responsible for much of the damage of the original accident.

Parks' affadavit, identifies the so-called "mystery man" and further particularizes the allegation.

A discussion of the operation of HPI at approximately 5:41 a.m. on the day of the accident is presented in Section II of this report.

The accident at TMI-2 has been reviewed extensively in the four years that have passed since March 28, 1979. The various individuals associated with HPI operation on the day of the accident, including those identified by Parks, have been interviewed at various times in the past, in many cases under oath. In light of the extent of these previous efforts, the likelihood is remote that the Parks' allegations contain significant new information which could affect the NRC's understanding of HPI operation on the morning of March 28, 1979.

APPENDIX A
MEETING SUMMARY

On March 21, 1983, R. Arnold of General Public Utilities (GPU) telephoned V. Stello and requested a meeting with Mr. Stello to discuss information Mr. Arnold considered related to the review team's examination of the B&W-GPU trial court record. Mr. Stello agreed to a meeting which was held later in the day and attended by R. Arnold, V. Stello, J. Craig, T. Harpster and R. Hoefling.

At the beginning of the meeting, Mr. Stello informed Mr. Arnold that the review team's draft report would not be discussed at the meeting and that a meeting summary would be prepared. Mr. Arnold indicated agreement with this approach. Neither the draft report nor any team activities were discussed during this meeting.

Mr. Arnold then related at the meeting GPU's concern that the trial court record may not include all the information germane to the review currently being conducted by the NRC staff. Mr. Arnold stated that a number of documents which may be of interest were not a part of the trial court record. Specifically, the B&W-GPU trial preparation has resulted in 1767 exhibits and 81 depositions. While a number of exhibits and excerpts from depositions were included in the trial court record, Mr. Arnold stated that much of this material was not a part of the trial court record. GPU has conducted a preliminary sorting of this material removing from consideration such documents as were publicly available, which had already been provided to the NRC or those judged to have no potential significance. As a result of this sorting, GPU concluded that about 580 documents remain which may contain something of interest. Mr. Arnold stated that all of the documents were indexed and available for NRC inspection and copying at GPU's Parsippany offices.

Mr. Stello asked Mr. Arnold whether he felt the documents contained important information which the NRC did not now have. Mr. Arnold stated that he believed that the NRC had previously reviewed all of the significant information and that no significant new information was contained in the documents.

Mr. Stello stated that he would consider GPU's offer and would contact Mr. Arnold if the NRC staff wished to review the documents.

Also discussed during the meeting was the Hartman matter regarding leak rate calculations. Mr. Stello indicated that he had attempted to obtain the Hartman deposition taken in the lawsuit by B&W. Mr. Arnold offered to provide the document expeditiously. Mr. Arnold also commented that some 20 depositions taken in the lawsuit touched upon the Hartman matter. Further, he stated that, when the Hartman matter first surfaced, GPU conducted an initial inquiry into the matter and prepared a confidential report on the matter. Mr. Arnold noted that GPU was considering providing this document to the U.S. Attorney conducting the grand jury investigation.

Also discussed was B&W Exhibit No. 843 (Internal Audit Report of TMI Management performed in early 1978). Mr. Stello expressed an interest in learning when that document was first made publicly available. Mr. Arnold offered to pursue that matter and to provide Mr. Stello with a response. *

Finally, the issue of natural circulation procedures, which had been the subject of a Board Notification, was briefly discussed. Mr. Arnold noted that this issue had been resolved some time ago for TMI-1 through procedure revisions.

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* Mr. Stello was informed on March 22, 1983 that GPU was not aware of any review of this internal GPU document by any external organization prior to the initiation of the B&W-GPU lawsuit.

APPENDIX B
PRECURSOR EVENTS

The precursor events discussed in the trial court record are summarized below. Prior reports wherein the precursors are discussed are also identified. These reports also discuss other precursor events. Caution should be used during any review of these six or other precursor events in attempting to predict past operator actions based on a piece of information now believed to be significant. The numbers in brackets indicate which events were examined in the respective report. For example, the SIG report contains a discussion of events 2, 3, 4, 5, and 6.

Number	Precursor Event
1.	The TMI-2 September 1977 event: Steam formation during hot functional testing before fuel load.
2.	Davis-Besse transient in September 1977: rapid depressurization of the reactor coolant system which was initiated by a failure in the Steam Feed Rupture Control System compounded by a failure of the auxiliary feed pump turbine speed control, PORV failure and operator error.
3.	TMI-2 April 23, 1978, over-cooling transient: reactor trip resulting from spurious signal, 5 main steam valves fail to close.
4.	TMI-2 November 7, 1978, over-cooling transient: reactor trip due to loss of feedwater.
5.	TMI-2 December 2, 1978, over-cooling transient: reactor trip due to loss of feedwater.
6.	TMI-2 March 29, 1978, transient: power failure to the control circuit for the PORV that resulted in the PORV opening.

Precursor Events Discussed	Report
[2, 3, 4, 5, 6]	Three Mile Island, A Report to the Commissioners and to the Public, (Rogovin Special Inquiry Group), NUREG/CR-1250, Volume II, Part 1.C, Precursor Events.
[2, 6]	Report of the President's Commission on the Accident at Three Mile Island (Kemeny Commission), Volume III, C.12.
[1, 2, 3, 6]	Nuclear Accident and Recovery at Three Mile Island (Senate Report), Chapter 6, Prior to the Accident.

[2]	Analysis of Three Mile Island - Unit 2 Accident, Nuclear Safety Analysis Center, Appendix PE - Precursor Events.
[3, 4, 5, 6]	Investigation Into the March 28, 1979 Three Mile Island Accident by Office of Inspection and Enforcement, NUREG 0600, Section 1.5.2, Review of Selected Prior Trips.

APPENDIX C
INFORMATION OVERVIEW

The reader may develop an overview of the information contained in the trial court record concerning each area by reviewing the references provided below. An overview of the area of the flow of information is not provided because the record did not address events after approximately 6:20 a.m. on March 28, 1979 and because of the fact that this area was not pursued during the trial. The reader should refer to NUREG-0760 for an overview of this area.

AREA	Trial Court Record Reference	
Alleged GPU Falsification of Leak Rate Calculations	Frederick	Tr 3938 - 4043
	Hartman	Tr 7008 - 7995
Cheating on NRC and company administered examinations	Arnold	Tr 1720 - 1754
	Herbein	Tr 7124 - 7156
Maintenance	Arnold	Tr 1487 - 1500
		Tr 1645 - 1675
	Seiglitz	Tr 5701 - 5911

QUESTION 60. Has the NRC determined if information was improperly withheld from the various investigators of the TMI accident?

ANSWER.

The NRC has no knowledge of improper withholding of information from the various investigators of the TMI accident. However, the staff is currently evaluating whether information should have been provided to NRC investigators on lead rate tests not related to the accident. A final determination has not been made.

(OIA, OI, and Regional Offices say they have no basis to agree or disagree with this response.)

Additional views of Commissioner Gilinsky are attached.

QUESTION 60 Additional Views of Commissioner Gilinsky:

Commissioner Gilinsky adds:

We simply do not know whether or not information was withheld from the investigators of the TMI accident.

QUESTION 61. In what year did Ray Miller begin selling fraudulent steel to the nuclear industry?

ANSWER.

The only Ray Miller, Inc. records that the NRC has been able to find as of this time are those in the custody of the FBI Office in Charleston, West Virginia. These records are from the Charleston branch office of Ray Miller and cover the period 1975-1979. However, during discussions with the Assistant United States Attorney and the FBI Special Agent involved in the case, they stated that they believed the fraudulent practices went back to about 1960. As noted in the response to Question 62, only a relatively small fraction of the customer's of Ray Miller, Inc., are involved in the nuclear industry. Some of these customers did receive fraudulently re-marked material during the period 1975 through 1979. We do not know if any of these customers received fraudulent material prior to 1975.

QUESTION 62. What percent of Ray Miller's customers were in the nuclear industry?

ANSWER.

Based on the review of available Ray Miller, Inc. records (see part i of response to question 66), it is estimated that about 3 percent of Ray Miller's customers are involved in the nuclear industry. This estimate is based on the following:

1. The NRC review of approximately 15,000 purchase orders at Charleston, West Virginia disclosed that during the period 1975-1979, the Charleston branch of Ray Miller had about 1100 customers.
2. About 31 of these customers were utilities that are constructing or operating nuclear power plants, major architect-engineering firms, known suppliers of systems and components to nuclear facilities, or fuel cycle licensees. It should be noted that all of these customers have a large number of non-nuclear activities. Therefore, it is not known in all cases whether material sent to these customers was used in nuclear facilities.

QUESTION 63. When did the Justice Department and the FBI first begin their investigation of Ray Miller?

ANSWER.

NRC believes that the FBI/DOJ investigation of Ray Miller, Inc., was initiated about June 1979. The FBI and/or the DOJ would be able to furnish more accurate information in this regard.

QUESTION 64. On what dates was Ray Miller indicted, convicted, and sentenced?

ANSWER.

On July 13, 1982, an officer and an agent of Ray Miller, Inc. were presented in the U.S. District Court for the Southern District of West Virginia by an Information charging Mail Fraud and Fraud by Wire. On this same date Robert Polan, Vice President, Ray Miller, Inc. pleaded guilty to one count of both wire and mail fraud. Hugh Kesecker, Branch Manager of the South Charleston facility of Ray Miller, Inc. pleaded guilty ~~of~~ to one count of mail fraud.

On November 15, 1982, Assistant U.S. Attorney Ruth Lynette Ranson,in a plea agreement with Ray Miller, Inc., filed an Information, in lieu of an Indictment, in the U.S. District Court, Southern District of West Virginia, charging Ray Miller, Inc., with six counts of Mail Fraud and four counts of Fraud by Wire. On December 23, 1982, Ray Miller, Inc., pursuant to the plea agreement and Information filed November 15, 1982, was sentenced and fined $10,000.

QUESTION 65. What is the precise amount of time between the date Ray Miller was indicted and the date the Justice Department notified the NRC?

ANSWER.

Please see response to question 64 for background information relating to this question. On November 17, 1982, as a result of a newspaper article, NRC became aware of the Ray Miller, Inc. indictment. On November 18, 1982, the NRC contacted the United States Attorney's office, Charleston, West Virginia on this matter.

QUESTION 66. What was the NRC response to the information about Ray Miller? What specific steps did the Commission take to promptly review all of Ray Miller's records?

ANSWER.

On November 17, 1982, NRC staff members in the NRC Region II office in Atlanta, Georgia became aware of a November 16th article in the State, a Columbia, South Carolina newspaper, regarding Ray Miller, Inc. The article was forwarded to the NRC Office of Inspection and Enforcement in Bethesda, Maryland on the same day. Immediate action was taken to determine the magnitude of the problem and its potential impact on nuclear facilities. Specifically, the NRC took the following steps to obtain and disseminate pertinent information:

a. On November 17, 1982, the Office of the United States Attorney, Charleston, West Virginia, was contacted in an attempt to obtain information pertaining to Ray Miller, Inc., Assistant United States Attorney (AUSA) Lynette Ranson, who prosecuted the case, was out of the office and not due to return until November 18, 1982.

On November 18, 1982, AUSA Ranson was contacted and related that Ray Miller, Inc., had in fact entered a plea of guilty to 10 counts. AUSA Ranson stated that Special Agent (S/A) James Kessler, FBI, Charleston, West Virginia, was in charge of the investigation of Ray Miller, Inc., and that it has taken three years to complete. Ranson stated that a list of Ray Miller, Inc., customers had been developed by S/A Kessler and that Ray Miller, Inc., was being required to write a letter to each of these companies informing them that they had sold them a fraudulent product.*

Ranson did see a problem in obtaining other forms of documentation (i.e., invoices, statements, investigative reports) since that information was part of the Grand Jury's records and was covered by Rule 6(e) of the Federal Rules of Criminal Procedure and cannot be disclosed without a court order.

b. On November 22, 1982, S/A Kessler was contacted and related that he had been involved in the investigation of Ray Miller, Inc., for the past year. However, he stated that he had taken over the investigation from another S/A who had worked on it for two years. S/A Kessler agreed to furnish a list of the companies developed during the course of the investigation but cautioned that this cannot be considered a complete list. On November 23, 1982, Kessler notified NRC that a copy of the requested list had been mailed. In addition, he related the Section 6(e) of the Federal Rules of Criminal Procedure had been imposed which prohibited the release of any further documentation pertaining to the investigation. Kessler did state that every effort would be made to gain the release of pertinent documentation at the earliest possible date.

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*Although information available at that time indicated 125 companies had been supplied by Ray Miller, Inc., more recent information (see item i below) shows the number is about 1100. NRC review of the generic implications of the matter is continuing.

QUESTION 66.

c. A list of Ray Miller, Inc., customers was received from the FBI on November 29, 1982. The list was reviewed and it was noted that two utilities which owned and operated nuclear power generating facilities were on the list: Virginia Electric Power Company (VEPCO) and TVA.

d. On November 30, a member of the NRC Office of Inspector and Auditor contacted S/A Kessler to further pursue the most expedient means of NRC staff obtaining access to the Ray Miller, Inc., records. The NRC was informed that the defendants would be sentenced on December 9, 1982 and that the lawful custody of the records would revert to the Ray Miller, Inc., attorney However, the FBI had arranged with the Ray Miller, Inc., attorney to retain physical custody of the records, and that the NRC could have access after the defendants were sentenced. Arrangements were made for NRC personnel to meet with AUSA Ranson and S/A Kessler on December 16 and 17, 1982 to discuss the case and to perform a preliminary review of the records. On December 9, 1982, the NRC was informed by S/A Kessler that sentencing had been delayed to December 23, 1982 and the records were not available until after that date. The meeting of December 16 and 17, 1982 was re-scheduled for January 6 and 7, 1983. TVA was also contacted through NRC's Region II office but plants where the Ray Miller products might have been installed were not identifiable at that time.

e. A VEPCO representative was contacted December 6, 1982. The VEPCO representative stated that they also became aware of the problem from newspaper articles. He stated that although most of the material that VEPCO had received from Ray Miller, Inc., did not go to nuclear power plants, some did go to the Surry nuclear power plant. VEPCO had placed all the material from Ray Miller, Inc., that had not been installed on hold and were in the process of determining the location in the plant where the remaining Ray Miller products had been installed.

f. On January 6 and 7, 1983, members of the NRC staff met with S/A Kessler and AUSA Ranson in Charleston, West Virginia. The purpose was to discuss the Ray Miller, Inc., case and to review a sample of the 29 boxes of records currently in the custody of the FBI. These records cover the period from 1975 to 1979. S/A Kessler and AUSA Ranson stated that after 1979, Ray Miller, Inc., apparently ceased its fraudulent practices.

The major conclusions reached as a result of the meeting and the preliminary review of selected records were: (1) in some instances incorrect material had been provided by Ray Miller, Inc., to fill orders, and fraudalent certifications had been provided during the period from about 1960 to 1979, (2) the available company records (1975-1979) show items which were apparently fraudulent; the NRC is checking on the availability of records prior to 1975, (3) the company provided mostly small diameter pipe, pipe fittings and tubes, (4) a relatively small percentage, perhaps up to 10%, of Ray Miller's customers were possibly involved in the nuclear industry, including DOE facilities, and (5) most of the orders were for small monetary amounts (several hundred dollars to several thousand dollars).

QUESTION 66.

Fraudulent substitution of materials were made in the following areas: (1) welded and drawn tubing was re-marked and sold as seamless tubing, (2) orders for 304L stainless steel (low carbon content) were filled with 304 stainless steel having standard carbon content, (3) foreign made materials and were sold as domestic made materials, and (4) small pipe fittings (e.g., plugs for 1/4 inch to 3/4 inch pipe) having a 150 lb. rating were sold as having 3000 lb. rating. (Item 4 was identified from the NRC preliminary records review and was not part of the Justice Department indictment.)

g. On January 12, 1983, a meeting was held to discuss the problem with representatives of industry (Atomic Industrial Forum and VEPCO; see response to question 67) and DOE. As stated in Item e. above, the Surry plant had received some material from Ray Miller, Inc., and was in the process of tracing it. The NRC preliminary review of the records revealed that only a very small portion of the material sent to the Surry plant by Ray Miller was fraudulent. The review also indicated that very few orders were sent to TVA.

The action items that resulted from the meeting were:

(1) An NRC decision that (a) IE would issue an Information Notice and (b) the NRC would make arrangements to interview some of the principals at Ray Miller, Inc., to better determine the extent of the fraud;

(2) VEPCO would (a) attempt to trace the known fraudulent material to see if it was installed in the Surry plant and (b) test some of the other material received from Ray Miller (the materials not installed had already been pulled from stock and placed on QA hold list); and

(3) NRC, DOE, and industry would plan how best to perform a comprehensive review of the Ray Miller, Inc., records on an integrated basis.

The NRC staff performed a preliminary generic evaluation of the potential safety significance of the known types of fraudulent material substitutions made by Ray Miller, Inc. The results of the evaluation indicate that the potential safety significance is likely to be relatively small. The known fraudulent material involves mostly small diameter pipe fittings (2 inches nominal size, or less) and tubing (generally 1/2 inch diameter). Any of the material that was possibly installed in safety-related systems should have been subjected to hydrostatic testing in excess of the normal operating pressures in accordance with the applicable code. Therefore, some level of assurance exists that the material has suitable structural strength. If an abrupt failure were to occur in any material that forms a portion of the reactor coolant pressure boundary, the consequences of a failure would be a very small loss of coolant accident, which is well within the current licensing design basis.

QUESTION 66.

h. On January 25 and 26, members of the NRC staff interviewed two former Ray Miller employees in Charleston, West Virginia. These and other interviews being conducted are to validate previous information that was ascertained on January 6 and 7, concerning Ray Miller, Inc., operations to defraud, and if possible, to more specifically define the scope of the firm's fraudulent practices.

i. During the period February 7, 1983 through February 25, 1983 NRC staff members reviewed 29 boxes of records that were in the custody of the FBI at Charleston, West Virginia. These records are from the Ray Miller branch office at Charleston and cover the years 1975 through 1979. The records consist of individual purchase orders and work sheets used by Ray Miller as they filled orders. Many of the work sheets had notations that indicated when materials other than that ordered were used to fill the order. Apparently, the markings on the material shipped were often fraudulently changed to correspond to the material ordered.

The NRC reviewed approximately 15,000 individual purchase orders and the Ray Miller work sheet for each order. They compiled the following information:

(1) A complete customer list. The original list prepared by the FBI was based on the 1979 records and consisted of 125 customers. The NRC list based on five years of records consists of about 1100 customers.

(2) Summary information for each line item on the purchase order for those cases where the Ray Miller work sheets indicated that a fraudulent substitution had been made.

The information obtained during the NRC records review has been entered into a computer system. The data is currently being sorted and checked.

j. On March 10 and March 11, 1983, letters were sent to the attorney who represented Ray Miller, Inc. during the criminal proceedings and to the attorney administering the bankruptcy aspects of the case. Each was requested to provide information concerning additional records for the Charleston office or any other branch office, if such records exist.

k. The NRC, through its Office of Investigations, is attempting to interview former employees from other branch offices to determine whether additional records are available and to gain further information concerning the practices of other branch offices.

QUESTION 67. Is there any truth to the statement that an industry trade association participated in the review of Ray Miller's records?

ANSWER.

The review of Ray Miller's records was performed by NRC employees from February 7 to 25, 1983. No industry trade or utility personnel participated in that review. Examples of fraudulent records were provided to participants of the January 12, 1983 meeting described in the response to question 66 (see part g). That meeting was held to discuss the Ray Miller situation and to provide information obtained during the January 6 and 7 trip to Charleston, West Virginia (see part f of the response to question 66). The attendees at the meeting included representatives from the Department of Energy, the Atomic Industrial Forum and VEPCO. During a portion of the meeting, the NRC representatives described the types of information available in the Ray Miller records that were in the custody of the FBI, and provided VEPCO with information on the one order they received that appeared to be fraudulent based on the available records. It should be noted that the investigations of wrong doing had been completed prior to the meeting. An investigation of criminality was conducted by the FBI during the interval from 1979 to 1982. The firm and key officials were prosecuted by the U.S. Attorney, Charleston, West Virginia, guilty pleas were entered and sentencing of the Ray Miller, Inc., officials occured on December 23, 1982.

The January 12, 1983 meeting examined alternative actions in response to NRC concerns over possible installation and use of fraudulent materials in safety-related systems by NRC licensees. The purpose of the meeting was to explore means to expedite review of extensive records and to assure that we used every available channel of communication to disseminate information to potential industrial purchasers of possible defective material.

QUESTION 68. On what date did the NRC notify licensees? How much time elapsed between the date the NRC was notified by Justice and the date the NRC notified licensees.

ANSWER.

A chronology of the dates in which NRC obtained various information concerning Ray Miller, Inc. is provided in the response to question 66. All licensees were notified by IE Information Notice 83-01, dated January 26, 1983. As noted in the response to Question 66, this matter was discussed with VEPCO on December 3, 1982 to obtain information. VEPCO personnel had already learned of the problem from newspaper articles. As indicated in the response to Question 66, the NRC first became aware of the problem from a newspaper article on November 17, 1982 not by notification from the Justice Department. NRC staff met with the Assistant United States Attorney and the FBI Special Agent on January 6 and 7, 1983. The elapsed time from that meeting to the publication of IE Information Notice 83-01 was 19 days.

QUESTION 69. How could a licensee track substandard steel in his plant? How could a licensee determine what subcontractor supplied what materials for his plant? Does a licensee mark any components during construction so that tracking of materials could be readily accomplished?

ANSWER.

Licensees and construction permit holders are required to maintain identification of materials and components used in safety related systems in accordance with subsections NCA 3800 and NCA 4000 of Section 3 of the ASME Code. Major components such as pumps, heat exchangers, tanks, vessels, large valves, and large diameter pipe have individual identification numbers and can be easily tracked to the supplier and the original manufacturer of its parts. Materials such as small diameter piping, pipe fittings and tubing that were supplied by Ray Miller, Inc. are required to be traceable to the supplier and are identified by heat or lot number. However, each piece does not have a separate identification number. Hence, these types of components are more difficult to track.

Since 1973, each component, even small diameter pipe and pipe fittings, used in safety related systems were required by the ASME Code to have an appropriate certification from the supplier. These certifications are required to be stored and be retrieviable by the licensee. In general the tracking systems used during the 1970's focused on being able to identify the supplier of each component in a particular system, and to retrieve the certification for that component. However, those tracking systems were not designed to work efficiently in the reverse manner; that is, to identify the location in a plant of a particular small component supplied by a specific company. Thus, it is difficult for a licensee to identify exactly where material from a particular supplier, for example Ray Miller, was specifically installed in the plant.

More recently, some licensees have installed sophisticated computer tracking systems that can perform searches to either identify the suppliers of each component in a particular system, or the specific location in the plant of a particular component from an individual supplier. However, these computer systems are generally limited to components that were installed relatively recently.

QUESTION 70. What can the NRC do to guarantee that all materials from nuclear power plants meet their proper standards? What steps will the NRC take to prevent a case similar to the Ray Miller case in the future?

ANSWER.

The Commission has taken and is planning a number of actions to increase the assurance that all materials in safety related systems of nuclear power plants meet the proper standards and prevent the recurrence of incidents such as the Ray Miller, Inc. case. These actions include the following:

a. The Commission has alerted all holders of a nuclear power reactor or fuel facility operating license or construction permit of the potentially significant problem pertaining to fraudulent products that may have been sold to nuclear industry companies by Ray Miller, Inc. This notification was made IE Information Notice No. 83-01 and was issued on January 26, 1983. Additionally, a letter was sent on the same date to the chief executive officer of each utility that holds a construction permit or operating license for a nuclear power plant. The letter addressed quality assurance programs in general and included information about unapproved fittings provided by Tube Line Corporation as well as the fraudulent practices of Ray Miller, Inc.

b. The staff is considering requiring specific actions on the part of licensees that have received suspect materials from suppliers. These actions, once approved, will be specified and imposed through the issuance of an IE Bulletin.

The actions identified in (a) and (b) will emphasize to the industry the need for adequate quality assurance programs which cover both American Society of Mechanical Engineers (ASME) code and non-code suppliers. Ray Miller, Inc. was a non-code supplier, i.e., did not hold a code certification.

c. The Commission is currently conducting investigations and reactive inspections of a number of material suppliers. These activities were initiated as a result of material deficiencies that were identified through licensee and vendor quality assurance programs.

d. Applicable industry codes and standards are currently being reviewed to determine whether changes should be recommended in light of recent problems with material suppliers.

e. Based on evaluation of the findings resulting from current investigations and reactive inspections of material suppliers, the Commission will review whether changes to NRC Regulations, applicable to licensees, are needed.

f. A procedure for routine NRC inspection of a sample of material suppliers such as Ray Miller, Inc. will be developed for implementation.

QUESTION 71. How many new nuclear power plants do you project will come on-line the next three years? Why is there a significant discrepancy between Commission and industry estimates?

ANSWER.

In FY 1983 through FY 1985 the Commission projects that it will issue 18 to 24 operating licenses to new nuclear power plants. A slightly smaller number will come on-line, since it takes time to load fuel and perform startup tests prior to receiving a full power license.

The primary reason for the disparity between industry and NRC estimates of license issuance (construction completion) is that industry is more optimistic. Many times there is insufficient contingency in the industry estimate for the inevitable problems that arise in the final stages of construction, such as required rework, and during acceptance and pre-operational testing.

QUESTION 72. How many new construction permits will the Commission issue over the next three years? How many new application for construction permits does the Commission expect to receive? When does the Commission reasonably expect the next order for a new plant and the next application for a construction permit?

ANSWER.

The Commission expects to issue three new construction permits over the next three years: Clinch River, and Skagit/Hanford 1 & 2. However, the Licensing Board has granted applicant's motion to stay the prehearing schedule for Skagit/Hanford pending completion of a Regional Power Plan by the Regional Power Council. Consequently, no firm schedule for completion of the Skagit/Hanford review is available at this time.

QUESTION 73. How many plants have been cancelled in the last five years? How many plants have been deferred in the last five years?

ANSWER.

Cancellations from FY 1979 to present are reflected in the table below. From FY 1979 to present various plants have been deferred which either were later reactivated or cancelled. At the present time ten plants are deferred.

	Cancellations	
	Under CP Review	Granted CPs
FY 1979	10	1
FY 1980	9	1
FY 1981	5	5
FY 1982	6	10
FY 1983	2	3

QUESTION 74. How many plants with construction permits does the Commission expect will be cancelled? How many plants with construction permits does the Commission expect will be deferred?

ANSWER.

The Commission does not speculate on cancellations or deferrals. Of the 59 plants with construction permits, 10 are currently indefinitely deferred.

QUESTION 75. How many dollars, staff-hours and other NRC resources have been allocated to the Commission's licensing reform proposal? Please be comprehensive and specific.

ANSWER.

Listed below are the staff-hours and expenses, including salary and travel, incurred by the Regulatory Reform Task Force for the sixteen month period November 1981 through February 1983.

Staff-hours	(10,904)
Salaries	$179,816
Benefits	16,902
Travel	5,257
Total Expenses	$201,975

QUESTION 76. Based on your current analysis, of what significance and severity would the failure of the automatic system have been had the plant been operating at near or full power, instead of at very low power?

ANSWER.

In themselves, the Salem ATWS events of February 22 and 25, 1983, were not serious threats to public health and safety. The primary reasons were that the reactor was at low power in both events and the operators scrammed it manually without depending on the automatic scram. However, the events are important in that they are indications or early warnings of more serious ATWS accidents that could occur. The Salem events would have been more severe if 1) they had occurred when the reactor was at full power; 2) the initiating event had been more severe but within the range of operating events for this station; and, 3) there were either operator errors or additional equipment failures. In the extreme, an ATWS event from full power can lead to a core meltdown. To understand how much more extreme the conditions would have to become, it is useful to first examine a limiting ATWS event and then list the opportunities for operator intervention to decrease its severity. Then it is useful to see what practical steps could be taken through design changes to further reduce the likelihood and severity of such an extreme ATWS event.

For the four-loop Westinghouse PWR design, of which Salem is typical, there have been many previous analyses of severe ATWS accidents in connection with the ATWS rulemaking (Unresolved Safety Issue A-9). Relying on these analyses, as presented in WCAP-8330, a worst case ATWS event would proceed as follows: (these analyses, performed for a composite four-loop Westinghouse PWR design, are not specific to Salem).

Assume the reactor is operating at full power soon after startup following a refueling (this was the case at Salem 1 in February, except the reactor was ascending to full power and did not attain it). Assume next that the reactor experiences a complete loss of main feedwater (this would be much more severe than the ATWS initiator on February 22, which was the loss of one feedwater train, or February 25 where feedwater control as temporarily lost, but not the pumping capability). Next assume that the automatic reactor scram fails entirely (this was the case at Salem). As a result, the automatic turbine trip would also fail (this was the case at Salem). Loss of feedwater under these conditions results in a large mismatch between the heat generation and the heat removal rates for the reactor coolant system because the secondary system could no longer remove all the heat generated in the reactor core. There is then an increase in reactor coolant temperature and a decrease in coolant density, producing a surge of coolant to the pressurizer which increases the pressurizer level and the system pressure. The pressurizer relief and safety valves would open to limit pressure buildup. Steam generator inventory would decrease, as the result of boiloff with no replenishment by feedwater flow, and further reduce heat transfer from the primary to the secondary system. The reactor coolant temperature and pressure would increase even faster. The maximum system pressure for this postulated accident would occur when the large decreases in coolant density result in a large reduction in reactor power. At this point, system pressure would decrease and a steam space would again occur in the pressurizer. If, after pressure decayed, emergency core cooling could be established, core melt would be prevented.

QUESTION 76

A plot of calculated pressurizer pressure versus time for this severe ATWS accident in a typical four-loop Westinghouse plant is presented in Figure 1. The maximum pressure of about 3650 psi would occur at about two minutes after the assumed loss of all feedwater (a comparable calculation by Westinghouse for Salem estimates 3491 psi). Operator actions to cause reactor scram within about 1 to 1-1/4 minutes after loss of feedwater would keep the system pressure near the normal operating pressure of about 2250 psi and there would be no damage to the reactor. If a manual scram is delayed slightly more, but accomplished within about one and one-half minutes, service level C (about 3200 psi) would not be exceeded and there is a high expectation that emergency core cooling could be established. After that time, scram would do little to reduce the peak pressure, but it would assist reactor recovery. Pressures above service level C may cause permanent deformation of valves needed to actuate the ECCS and consequently incapacitate the ECCS. Some key assumptions in this severe accident were as follows: (1) a moderator temperature coefficient of minus 8 x 10^{-5} ΔK/K°F, value that is not exceeded 95% of the time, (2) no credit for turbine trip and (3) credit for the normal capacity of the pressure power operated relief valves (i.e., they are assumed to be unblocked). If the turbine were to be tripped by the operators (in accordance with procedures at Salem) at 30 seconds into the event, the maximum system pressure would decrease about 950 psi event if there were no manual scram. The result would be a peak pressure of about 2700 psi, well within the capability to establish emergency boration and core cooling. There should be little or no fuel damage in this case. It is the most likely event if there were to be a complete loss of scram capability (both manual and automatic). The turbine is tripped automatically at about two minutes when the MSIV automatically closes on low steam generator pressure, the peak pressure of 3650 psi would be reduced very little.

If both power operated relief valves (PORV) were blocked, there would be an increase of about 300 psi in the maximum pressure of 3650 psi for the severe loss of feedwater ATWS accident with no turbine trip. If the turbine is tripped, the blockage of both PORVs would increase the peak pressure from 2700 psi to 2950 psi. Blockage of only one PORV would have about one half the effect of blockage of both PORVs.

If only one of the two normal feedwater trains were lost (as was the case on February 22 at Salem), then a complete failure to scram from full power with no operator action should result in a mild pressure transient and no fuel damage (Westinghouse calculates a peak pressure of 2330 psia for Salem).

If auxiliary feedwater is initiated earlier than the 60 seconds assumed in the severe ATWS analysis described above, there would be little decrease in the peak pressure (AFW from two of two trains is equivalent to about 8% of full power). Operator verification of AFW initiation is called for in the Salem procedures.

A practical design change that would reduce the likelihood of ATWS events in the Westinghouse design is the diversification of the present breaker design for interrupting power to the control rods. Such a change would have, in the case of the Salem event, eliminated the need for manual scram.

Practical design changes that should reduce the consequences of ATWS events in the Westinghouse design are the provision of diverse, automatic initiation of turbine trip and auxiliary feedwater. It can be seen from the discussion above that the automatic turbine trip removes the need for the operator to manually trip the turbine in the first two minutes of an extreme ATWS event to avoid exceedance of service level C.

The Westinghouse analysis for Salem is attached. Except for small differences in the pressure values that owe to the design details for that plant, the Westinghouse analysis generally agrees with the staff description provided above (which derived from earlier analyses by Westinghouse).

ATTACHMENT I

Analyses of the Salem Nuclear Plant for Postulated Feedwater Malfunction without Automatic Reactor Trip

WESTINGHOUSE ELECTRIC CORPORATION

M. P. Osborne
Transient Analysis
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Approved: J. Little 3/13/83
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SCOPE

In light of the recent failures of the reactor trip breakers to automatically function at the Salem plant, the purpose of this study is to realistically predict the consequences of a failure to trip for limiting plant transients while the plant is at full reactor power. The transients analyzed, specifically for the Salem plant, are a partial loss of steam generator main feedwater flow due to the trip of a single main feedwater pump and also a complete loss of main feedwater flow due to the loss of both main feedwater pumps. The latter, less probable, event is that presented in the Salem plant FSAR. As stated previously, the purpose of this study is to realistically predict the response of the plant to these events and, as such, the plant systems are assumed to function normally with the sole exception being the common mode failure of the reactor breakers to automatically function as was experienced on February 22 and 25, 1983. It should be noted that the spurious steam generator level trip generated on 2/25/83 was as a result of normal expected feedwater control system difficulties experienced at low (11%) power levels. It also should be noted that the loss of a feedwater pump on 2/22/83 was due to a normal manuevering of an electrical bus while configuring the plant in preparation for a power escalation. Both of these events are not normally expected at full power and thus one should consider more credible events such as a feedwater heater dropout rather than the more limiting and much less frequent feedwater pump malfunctions.

The study considers a thirty second operator response time for a manual reactor trip following the automatic protection system demand signal, a simulation of the actual response time of the February 25, 1983 event. The study also considers a more conservative operator response of five minutes in order to determine the sensitivity of the plant response to operator action.

DESCRIPTION OF TRANSIENT EFFECTS

Generic studies (WCAP 8330 Westinghouse Anticipated Transients Without Trip Analysis) of failure to trip events previously submitted to the NRC have identified the limiting full power events to be malfunctions affecting steam generator main feedwater flow. The reduction in main feedwater flow affects the overall heat removal capability of the steam generators and, as a result of the mismatch between the primary side heat generation and the secondary side heat removal produces a heatup of the primary system coolant. If the reactor is tripped promptly, the auxiliary feedwater system provides sufficient heat removal capability to remove decay heat. However if feedwater flow to the steam generators is reduced or terminated without subsequent reactor trip the secondary system will be unable to remove all of the heat that is generated in the core. This heat buildup in the primary system is a function of the amount of the feedwater reduction and is indicated by rising reactor coolant system temperature and pressure, and by increasing pressurizer water level due to the insurge of the expanding reactor coolant. Water level in the steam generators drops as the remaining inventory in the steam generators is boiled off due to inadequate spply of feedwater. When the steam generator water level falls to the point where the steam generator tube bundle is uncovered and primary to secondary heat transfer is reduced, reactor coolant system pressure and temperature increase at a greater rate. This greater rate of temperature and pressure increase is maintained as the pressurizer fills completely and water is discharged through the pressurizer relief and safety valves. Reactivity feedback, due to the high primary system temperature, reduces core power. As a result the system presure begins to decrease and a steam space is again formed in the pressurizer.

The limiting criteria for the postulated transients is that reactor coolant pressure be maintained sufficiently below the pressure corresponding to the ASME Code Service Level C (Emergency) stress limits. For the reactor coolant system, the corresponding pressure is 3200 psia.

CONTROL ROOM INDICATIONS AND MITIGATING ACTIONS

Although the reactor is prevented from tripping automatically by the common mode failure of the reactor trip breakers, there are many control room indications and alarms which are generated during the transient which would serve to alert the operator that the event has taken place. These indications in addition to emergency procedures, which require the verification of a successful reactor trip before all other actions, would support the mitigation of the consequences of the transient.

For a loss of normal feedwater event, in addition to normal process control alarms (pump trip, temperature, pressure, level and flow deviation alarms for both primary and secondary systems), the following audible alarms would be generated:

1. Steam/feedwater flow mismatch and low level (each steam generator)
2. Overtemperature Delta-T turbine runback
3. Overtemperature Delta-T reactor trip demand
4. Overpower Delta-T turbine runback
5. Overpower Delta-T reactor trip demand
6. High pressurizer pressure reactor trip demand
7. High pressurizer level reactor trip demand
8. Steam generator low-low level reactor trip demand
9. Low steam pressure safety injection (in coincidence with high flow)
10. Low reactor coolant loop flow reactor trip demand

Tables 1 and 2 show the time sequences for these alarms.

As part of the procedures the operator is required to exercise following any reactor trip demand, the operator is required to first verify the successful accomplishment of the reactor trip by observing rod position indicators, rod bottom lights, neutron flux, or reactor trip breaker position indications. The following actions are available to the operator in the main control room if an unsuccessful reactor trip occurs:

1. Manual reactor trip (with subsequent automatic turbine trip)
2. Manual turbine trip
3. Manual turbine runback (200%/min.)
4. Manual safety injection
5. Manual control rod insertion.

Outside the obvious benefit of an immediate reactor trip, the turbine trip or turbine runback action is the most important, if a reactor trip cannot be obtained manually, to terminate the steam flow demand from the steam generators to preserve steam generator inventory. Steam pressure and hence primary system temperature will be controlled by means of the steam dump control system, steam generator relief and/or safety valves. Other means outside the main control room are available:

1. Local manual trip of any reactor trip breaker
2. Local manual trip of the rod control system motor-generator sets
3. Local manual trip of the turbine

TRANSIENT SIMULATION

Analyses were performed to simulate both a partial and complete loss of main feedwater. These analyses are based upon previous models consistent with previous submittals to the NRC by Westinghouse on ATWS (NS-TMA-2182, T. M. Anderson to Dr. S. Hanauer, 12/30/79) but also are modified to more accurately model the Salem Plant.

The following conditions were assumed for both analyses:

1. Initial normal full power operation at beginning of core life. This corresponds to the current condition of the Salem Plant and is also the limiting condition since the moderator temperature coefficient is at its least negative value. A value of -8 pcm/°F, which is valid for 95% of core life, was assumed.

2. Both the pressurizer relief and safety valves are assumed to function. There are two relief and three safety valves. Pressurizer heaters and spray also function automatically.

3. The automatic turbine runback on either Overtemperature or Overpower Delta-T signals is operable. The runback setpoint is 3% below the trip setpoint. The turbine runback operates on a 30 second cycle. Turbine load is first reduced 5% in 1.5 seconds. If at the end of the 30 seconds the runback signal still exists, the load is further reduced another 5% and so on. The load reduction has a mitigating effect on the transient and helps reduce peak primary system pressure.

4. The rod control system is assumed to be in the manual mode consistent with actual practice. Automatic action of the rod control system would cause rod insertion when primary temperature increases and would be less conservative.

5. The steam dump control system is available. The capacity of the steam dump is 50% of nominal steam flow at full power.

6. Auxiliary feedwater flow (1760 gpm) begins at 10 seconds following receipt of the low-low steam generator level signal. This response time is based upon actual test data from the Salem Plant.

7. Operator action is assumed to initiate a successful manual trip. Turbine trip is initiated via the reactor trip breaker opening.

8. For the complete loss of feedwater transient, the main feedwater pumps are assumed to coastdown to zero flow in five seconds. For the loss of a single pump, one pump is assumed to coastdown to zero flow in five seconds; however, the remaining pump has rated flow capacity of 70% of nominal full power feedwater flow. Therefore, the second pump (the Salem Plant has two pumps) will increase its flow to 70% flow. The response time for the second pump is 20 seconds.

9. Nominal control and protection system setpoints were assumed.

TRANSIENT RESULTS

1. Loss of a Main Feedwater Pump

The sequence of events for both a 30 second and 300 second delay of manual reactor trip are shown in Table 1. The transient primary pressure calculations are shown in Figure 1. The low-low steam generator level setpoint is reached at 99 seconds; auxiliary feedwater is automatically initiated. Ten seconds later, auxiliary feedwater begins to be delivered to the steam generators.

30 Second Delay

For the case where there is only a 30 second delay, there are no subsequent reactor trip signals generated. There is no large heatup of the reactor coolant because the steam generator tube bundle does not uncover. Thus there is always adequate secondary side heat removal. The peak pressure of 2286 psia which occurs at 30 seconds, is only slightly above the pressure at which the presurizer sprays are actuated.

For this transient, the reactor coolant system integrity is not challenged.

5 Minute Delay

For the case where operator action is delayed 300 seconds (5 minutes), the reactor coolant system temperature increases, reaching the Overpower Delta-T setpoint for turbine runback at 190 seconds. This signal is maintained and thus turbine power continues to reduce 5% every 30 seconds until the turbine load is at 75%. At this point, the sum of the main feedwater flow from one pump plus the auxiliary feedwater flow is equal to the turbine steam flow. Therefore, steam generator level does not continue decreasing and stabilizes. The operator initiated reactor and turbine trip at 399 seconds occurs after the steam and feedwater flow have matched. The peak primary system pressure of 2330 psia at 267 seconds occurs before the steam and feed flow are matched. This pressure is below the relief valve setpoint (2350 psia). The pressurizer sprays, combined with the effect of reduced turbine load prevent any significant overpressurization. Again, reactor coolant pressure stays below service Level C limits of 3200 psia.

2. Loss of All Main Feedwater

The sequence of events for this transient are presented in Table 2. The transient pressure calculations are depicted in Figure 2.

The low-low steam generator level setpoint is reached at 33 seconds; 10 seconds later, auxiliary feedwater is delivered to the steam generators.

30 Second Delay

An automatic turbine runback due to an Overpower Delta-T is initiated at 43 seconds and turbine load is reduced 5%. The pressurizer relief valves open and maintain pressure at the setpoint value (2350) until the operator trips the plant at 63 seconds. Steam dump is initiated and reduces the primary temperature to the no load value of 547°F. For this transient the reactor coolant system pressure is well below 3200 psia.

5 Minute Delay

As in the previous case, the heatup of the primary coolant caused a turbine runback initiated by an Overpower Delta-T signal. The turbine load is reduced twice in 5% increments until the load is 90% of nominal load. Steam pressure starts to drop due to the boil off of water in the steam generators, generating a low steam pressure alarm. At this time primary pressure starts to increase and there is an insurge into the pressurizer, causing both pressurizer high level and pressure trip alarms to be actuated. The steam generator tube bundle begins to uncover, causing a larger rate of increase in primary pressure and temperature. The pressurizer fills and the peak pressure reached is 3491 psia. Nuclear power has decreased at this point to about 30% of nominal due to the negative moderator temperature reactivity feedback. As the relief rate of water through the relief and safety valves increases, the primary system pressure starts to decrease and the safety and relief valves close about 30 seconds after the time of peak pressure. The operator trips the reactor manually at 333 seconds.

CONCLUSIONS

Loss of a Main Feedwater Pump

The results presented here demonstrate that for the loss of one main feedwater pump, there are at least six major alarms in addition to others generated to alert the operator to the fact that a malfunction has occured. Furthermore, even for the event with a five minute delay in reactor trip automatic turbine runback reduces steam flow to match the capability of the auxiliary feedwater. For this event there is no threat of overpressurization in that the pressurizer relief valve setpoint is not even reached.

Complete Loss of Main Feedwater

For the complete loss of feedwater, operator action consistent with the action time taken at the plant on the February 25, 1983 event is sufficient to prevent overpressurization of the reactor coolant system. Peak primary system pressure results only in pressurizer relief valve actuation without the actuation of pressurizer safety valves. Furthermore, there are 3 major alarms which are actuated in addition to the steam generated low-low level alarm to alert the operator to take action.

As discussed earlier, it is a major reduction in primary to secondary heat transfer capability which causes the primary system heatup and pressure increase. A turbine trip reduces the amount of steam flow and the rate at which the level in the steam generator drops. If the turbine is tripped before there is a significant loss of steam generator inventory, the tubes will not uncover and the primary system will not overpressurize. Based upon the results discussed in the previous section, operator action to trip the turbine at or before one to one and a half minutes following the low-low level trip and alarm would prevent overpressurization of the reactor coolant system beyond 3200 psia.

It should be noted that the core nuclear characteristics (a moderator reactivity coefficient of -8 pcm/°F) used are not representative of the actual core design for the Salem Plant. Previous ATWS analyses have shown the peak pressure to be a strong function of the coefficient and there is a 100 psi reduction for every 1 pcm decrease in the coefficient. The Salem core is designed to operate such that by the time the plant reached full power it would have a coefficient of -10.5 pcm/°F or 2.5 pcm less than the coefficient in the study. This coefficient would be reduced even further by approximately 2 pcm/°F per month of operation (see Figure 3). The 10.5 pcm coefficient results in a peak pressure for the limiting case of five minute operator action of 3241 psia (a 250 psia reduction from 3491 psia) which is within the calculational band of the ASME Stress Level C limit. Therefore, the case represented in Figure 2 would not exceed the acceptance criteria.

Summary

In conclusion, this study has demonstrated the ability of the Salem Nuclear plant to withstand the effects of postulated gross feedwater malfunctions without reactor trip at full power with an artificially long delay for operator action. The results show acceptable response which is within calculational uncertainties of the ASME Stress Level C limits. These results are further affected by the low probability of these events occuring at full power in addition to the expected increasingly beneficial nuclear characteristics of the plant over core life.

TABLE 1

Sequence of Events
Loss of One Feedwater Pump

Event	Time^1	Time^2
Loss of one pump (alarm)	0	0
Remaining pump delivers maximum flow	20	20
Low-low SG level setpoint (alarm); auxiliary feedwater signal (alarm)	99	99
Auxiliary feedwater begins	109	109
Operator trips reactor and turbine	129	---
OPΔT runback setpoint (alarm) turbine load reduced 5%	---	190
Turbine load reduced 5%	---	233
OPΔT trip setpoint (alarm)	---	220
Turbine load reduced 5%	---	250
Peak Pressure Occurs	---	267 (2330 psia)
Turbine load reduced 5%	---	280
Turbine load reduced 5%	---	310
High pressurizer level setpoint (alarm)	---	311
Operator trips reactor and turbine	---	399
	3 alarms prior to trip	6 alarms prior to trip

(1) 30 second delay before manual trip

(2) 300 second delay before manual trip

TABLE 2

Sequence of Events
Complete Loss of Main Feedwater

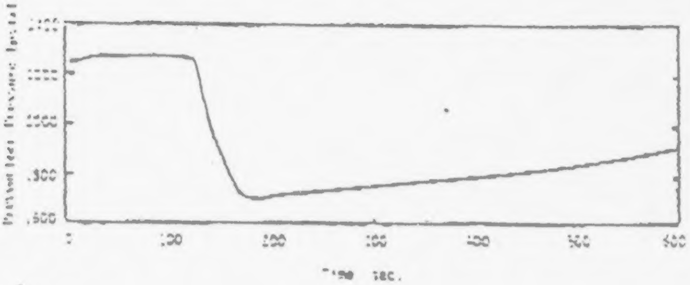
Event	Time[1]	Time[2]
Loss of main feedwater pumps (alarm)	0	0
Low-low SG level setpoint (alarm); auxiliary feedwater signal generation	33	33
OP Δ T runback setpoint (alarm) turbine load reduced 5%	34	34
OP Δ T trip setpoint (alarm)	43	43
Auxiliary feedwater begins	43	43
Pressurizer relief valves open	55	55
Operator trips reactor/turbine	63	---
Turbine load reduced 5%	---	64
High pressurizer level trip setpoint (alarm)	---	85
Low steam pressure SI (alarm)	---	85
High pressurizer pressure setpoint (alarm)	---	88
SG tubes begin to uncover; steam flow drops pressurizer safety valves open	---	92
Pressurizer fills	---	95
Peak pressure	---	114 (3491 psia)
Pressurizer safety valves close	---	142
Pressurizer relief valves close	---	155
Low RC flow setpoint (alarm)	---	159
Operator trips reactor/turbine	---	333
	4 alarms prior to trip	7 alarms prior to trip

(1) 30 second delay before manual trip

(2) 300 second delay before manual trip

Pressure Transient - Loss of One Feedwater Pump

30 Seconds Delay Before Trip



300 Seconds Delay Before Trip

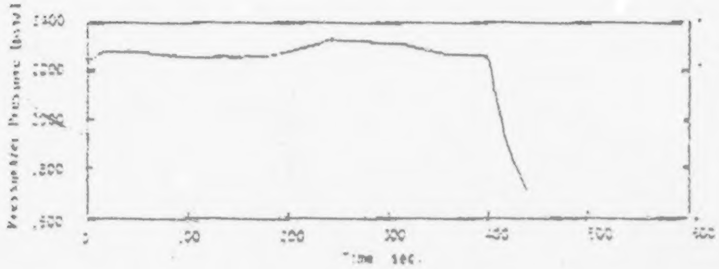
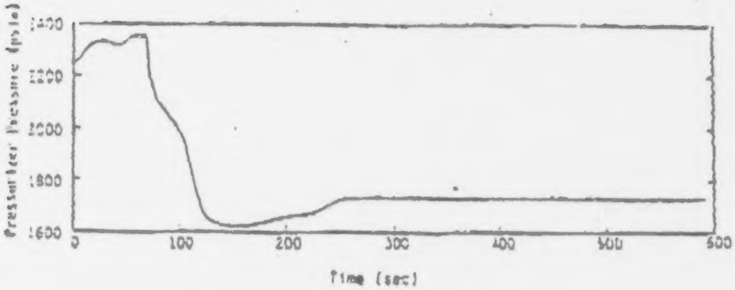


FIGURE 2
Pressure Transient - Loss of All Main Feedwater

30 Seconds Delay Before Trip



300 Seconds Delay Before Trip

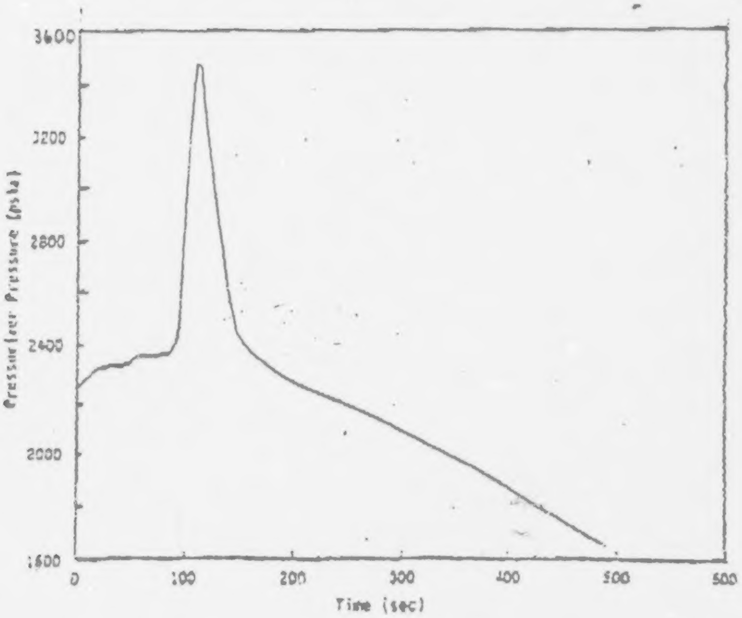
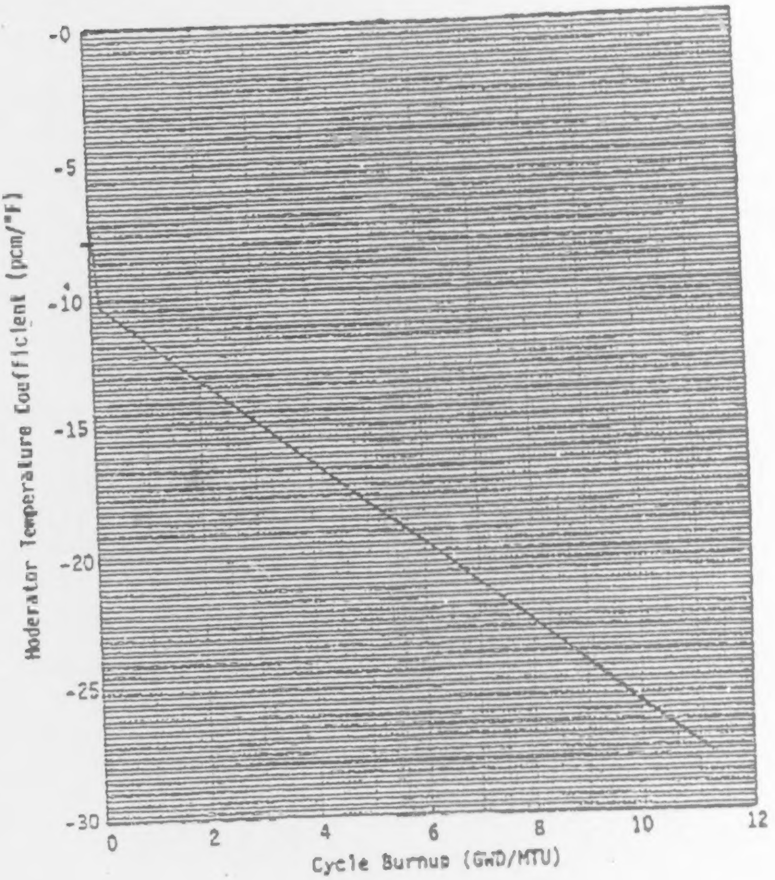


FIGURE 3

MODERATOR TEMPERATURE COEFFICIENT DURING CYCLE 5
AT HFP, ARO, EQUILIBRIUM XENON CONDITIONS*



*WCAP 10242,"The Nuclear Design of Salem Unit One Power Plant Cycle 5"

QUESTION 77. Are there other potential failures of plant equipment, what you technically call transients, that would occur simultaneously that would exacerbate the ability of the plant safety system to cope with the original failure?

ANSWER:

Of the anticipated transients (e.g., loss of feedwater, loss of offsite power, turbine trip, load rejection, boron dilution) considered in conjunction with a failure to trip in a pressurized water reactor, the loss of feedwater transient is the most severe. The ability to trip is also considered in the design basis loss-of-coolant accident (LOCA) because the blowdown forces associated with a large break could cause the control rods to bend and not insert. However, core voiding for those breaks acts to shut down the reactor and the water injected by the emergency core cooling systems contains sufficient boron to keep the reactor in a shutdown state.

Two malfunctions which would exacerbate the loss of feedwater ATWS in a PWR are a blocked power operated relief valve (PORV) and failure to trip the turbine. Blockage of both PORVs would increase the peak pressure 250-350 psi in a typical 4-loop Westinghouse plant and failure to trip the turbine would increase the pressure about 950 psi (from 2700 psia to 3650 psia).

If less than equilibrium xenon existed in the plant, the pressure could be increased as much as 100 psi. However, this would most likely occur after the reactor had operated for a time at less than full power and the reactor power was increased by moving the rods. The peak pressure would still normally be bounded by the pressure calculated for the start of a cycle (as has been done for Salem).

Following the peak pressure at about two minutes into the transient, operation of the ECCS to inject boron for reactor shutdown and auxiliary feedwater for heat removal is required. Failure of either of these multi-train systems would possibly result in core damage.

If the pressure spike which results from the ATWS were significantly above level C stresses, the check valves and injection valves in ECC systems could fail, causing a LOCA outside containment. Although this compound failure is not likely, the result could be core melt with a breach of containment.

QUESTION 78 It was stated in the NRC's first hearing to review this incident and in press reports that one of the key errors appears to have been the company's (Public Service Electric and Gas) lack of knowledge and diligence in the proper maintenance procedure on the trip breakers to insure safe operation of this equipment, which I believe the NRC considers "Safety Grade." That maintenance procedure was supposed to have been provided to the company in 1974.

(a) How is it possible that such an oversight could occur and not be noticed for nearly a decade by:

(1) the company,

(2) the manufacturer, and/or

(3) the Nuclear Regulatory Commission

ANSWER

The licensee has indicated that they were unaware of the existence of the vendor's (Westinghouse) 1974 technical circular/bulletins that provided preventive maintenance recommendations for the reactor-trip circuit breakers. (They were sent to a Westinghouse Service representative, but the licensee had no record of having received them.) Additionally, maintenance conducted on the reactor trip breakers in January 1983 was conducted with guidance from a Westinghouse (Apparatus Services Division) representative who was also unaware of the existence of the bulletins. As a consequence of this, Westinghouse has established an interdivisional task force to review current methods for distribution of technical information within the Corporation and methods for distribution of this information to utilities. Additionally, Westinghouse recently has provided (after the February 25 event) the Salem Station with all technical information for equipment supplied for Salem. Apparently, communication problems exist between the Nuclear Services Division and other Westinghouse divisions.

The Nuclear Regulatory Commission does not normally receive maintenance manuals and bulletins or service letters from vendors. Unless it has been a prior problem area, NRC does not normally review vendor's maintenance information except on an inspection sampling basis at the site as a part of the routine inspections of maintenance program implementation. NRC resources or program direction do not provide for verification that licensees receive all appropriate vendor supplied maintenance information.

QUESTION 78 (b) What corrective action will be required to remedy this situation?

(c) What elements of the corrective action will be taken prior to a restart of the plant?

(d) Prior to restart, will a check be made to determine what other oversights might have been made in other important safety or operating equipment?

ANSWER

The answer to (b), (c), and (d) above is in the process of being developed. For the Salem plant, specifically, a Restart Report is in preparation addressing the specific questions indicated above. To indicate the progress to date, a Salem Restart Status Report is attached. *

In addition, the generic implications of these events is being evaluated by a task force whose report is due by April 18, 1983. Additional longer-term requirements may result from this effort not only for the Salem plant but for other nuclear power plants as well.

*Retained in the committee files.

QUESTION 79. I understand that the NRC has a plant evaluation procedure known as a Systematic Assessment of Licensee Performance (SALP) which has been done on this plant (Salem).

a) What are the specific results of this SALP with regard to Salem?

b) Did the NRC evaluation in the SALP identify the problems of inadequate maintenance and incomplete maintenance manuals?

c) If so, what corrective action was ordered?

d) If not, what explains the NRC oversight?

ANSWER.

The NRC's program for Systematic Assessment of Licensee Performance (SALP) represents an integrated staff effort to collect available observations on an annual basis and evaluate licensee performance based on those observations.

For the Salem facilities, four SALP assessments have been conducted since October 1980. Copies of these reports are enclosed.* The earlier assessments identified weaknesses in the areas of: design change documentation, engineering support responsiveness, health physics, physical security and overall management followup to numerous areas. The later SALP assessments acknowledge licensee management attention to, and improvements in the areas of, design change tracking and documentation and health physics. Physical security, despite several initiatives on the part of the licensee to improve the area, continued to be weak. Very recently, the licensee has dedicated considerable resources to physical security which, if properly implemented, should facilitate a number of hardware improvements and add several managers to the organization to more effectively monitor security activities on a day-to-day basis.

While the SALP assessments have not identified specific problems of inadequate maintenance and incomplete manuals, other sections of these reports do emphasize the need for improved management controls over several aspects of plant activities. Although the NRC's investigation into the recent Salem event is not yet complete, it appears that some aspects of the event may stem more broadly from management control system deficiencies, as identified in SALP reports, which have resulted in specific problems such as improper scram breaker maintenance. For example, in the most recent SALP report for the period September 1981 through August 1982 general deficiencies were noted in management attention to the Quality Assurance audit program, the use of effective corrective action systems, and the establishment and use of formal plant procedures. Further, the report identifies the need for management attention to the coordination and communication between the plant staff and the corporate engineering staff.

*Retained in the committee files.

QUESTION 79.

NRC does not order licensees to take specific actions as a result of SALP reviews. We provide them with the SALP report and if appropriate, discuss it with them to indicate where management attention is required. The NRC inspectors then use the SALP findings to focus their inspections on problem areas and to follow up on licensee actions.

For example, in January 1983 (after the completion of the most recent SALP assessment) the NRC Resident Inspector's observation of corrective maintenance on scram breakers resulted in his identification of the need for the licensee to develop a formal preventive maintenance program for this equipment. This deficiency was brought to the licensee's attention and was placed on the Inspector's "Open Item" list for reevaluation following completion of the licensee's corrective action.

Concerning NRC's identification of maintenance problems associated with individual plant components, it should be noted that NRC's available inspection resources necessarily limit that portion of the inspection program to the periodic observation of specific maintenance activities on a sampling basis. As such we cannot expect to identify all maintenance problems at a plant. The success of this type of sampling inspection is difficult to quantify since the number of incidents prevented by remedial action is difficult to identify.

QUESTION 80 I understand that the manufacturer, Westinghouse, has agreed to provide the company with a complete compilation of all the safety bulletins they have issued on this design. How can the public be assured that prior to restart of the plant all of the required safety information is in hand and that all the required maintenance procedures have been carried out when there has been such a dismal failure in this recent incident?

ANSWER

The licensee has requested and received documentation for all Westinghouse equipment and prior to restart of Unit 1, will update existing documentation on safety equipment to determine that all required maintenance has been carried out. The licensee will also ensure that vendor documentation is under a controlled system. The NRC will perform inspections to verify the implementation of the licensee's program.

Although the NRC is not aware of any problems with other vendor documentation, the staff is concerned about whether a similar situation exists with respect to documentation for other vendor-supplied information. The licensee has proposed a multiphase program which extends through December 1983. We are currently reviewing the adequacy of this schedule.

QUESTION 81 Can you explain how it was possible that plant components which are considered "safety grade" may have been mislabeled?

ANSWER

The mislabeling, or incorrect classifications, of the maintenance activity work order as "non-safety-related" was due to the inappropriate use of an unofficial classification list contrary to station administrative requirements. However, the correct list, had it been used, also did not directly provide the information required to correctly classify the maintenance. In this case, the classifier, by instruction, should have contacted the Engineering Department for the classification; he did not. The management controls that allowed this situation to develop are discussed in the answer to the next question. NRC has required the licensee to review all non-safety related work orders issued since mid-1981 for proper classification prior to restart. The licensee will be required to evaluate the safety consequences of those found improperly classified. Also, for future work orders, the licensee has made a commitment to have the Quality Assurance Department review, for concurrence, all non-safety-related work orders prior to starting work.

QUESTION 82. What assurance is there that this type of slip-up won't occur with regard to other safety equipment?

ANSWER.

The licensee maintains a Q list that identifies activities, structures, and systems to which the Operational Quality Assurance (QA) Program applies and includes most of the systems important to safety. A Master Equipment List (MEL) is used by the licensee as the reference document for determining the safety classification of individual equipment. The MEL is intended to be a comprehensive list of all station equipment and identifies each item as non-safety related or safety related. When preparing maintenance work orders, the MEL is consulted to determine if QA coverage of the work is necessary. Licensee and NRC review identified three problems associated with the MEL. These problems are, (1) the accuracy and completeness of the document, (2) issuance as a noncontrolled document, and (3) lack of understanding by plant personnel of its proper use.

The MEL was derived from engineering source documents and a construction program document called Project Directive 7 (PD-7) and was provided to station personnel by the Engineering Department as a reference document in July 1981. Prior to issuance of the MEL, the PD-7 was used as the reference document. The MEL, however, was not issued as a controlled document, therefore, verification of its accuracy and completeness on issuance was not assured, and it was not updated in the plant as necessary. The reactor-trip circuit breakers were not included in the MEL. In addition, some personnel were not familiar with how to use the MEL for determining the classification of a particular piece of equipment. Maintenance personnel acknowledged that reference was made to PD-7 on occasion during the January-February 1983 period.

Furthermore, the review identified that the personnel preparing maintenance work orders were not complying with instructions contained in the station administrative procedure. Specifically, for the work performed on the reactor-trip circuit breaker in January 1983, the engineering department was not consulted to verify safety classification, and an erroneous nonsafety determination was made. Such consultation is required if equipment is not listed in the MEL. There was, therefore, no independent review within the maintenance organization, and the Quality Assurance Department was not involved in the work. Historically, there was no requirement for QA personnel to be involved in the review of work orders as they were processed to assure that appropriate steps were taken to assign classification. It should be noted, however, that all other work orders for maintenance or services on the reactor trip breakers were found to be properly designated safety-related.

Prior to restart of Unit 1, the NRC will require the licensee to undertake a number of actions. These actions will be identified in the Staff's Safety Evaluation Report and an accompanying Order that are expected to be issued about mid-April.

QUESTION 83. As I understand the technical evaluations I have seen, this type of event has been calculated to have an extremely low probability. Given its recurrence in the three day period and the obvious implication of human error, what do you presently calculate to be the probability of such an event?

ANSWER.

In WASH-1400 a pressurized water reactor designed by Westinghouse was analyzed. The median probability of SCRAM failure was estimated at 3.6×10^{-5} per demand with an upper bound of 1×10^{-4}. The frequency of ATWS is the product of the frequency of anticipated transients requiring SCRAM and the probability SCRAM failure on demand. With approximately 10 transients per year the median estimated ATWS frequency would be 3.6×10^{-4}/ year with an upper bound of approximately 1×10^{-3}. However, only a fraction of ATWS events would result in reactor core damage. Most ATWS events would be relatively mild and controllable, as was the case at Salem, a plant of Westinghouse design. In addition, it should be noted that the Salem event involved a failure to automatically SCRAM but manual SCRAM worked as designed.

The NRC staff has been using an estimated SCRAM failure probability of 3×10^{-5} per demand (independent of human error). There are several methods which could be used to calculate an estimated SCRAM failure probability. The effect of the Salem events on the probability differs depending on the methods chosen. Using appropriate methods, the staff calculation results in an increase in the probability by about a factor of six to eight for Westinghouse plants. Human error can have an important effect in the followup period of plant recovery after the automatic actions. The procedures and training of operators for this period is being given more attention as a result of the Salem events.

While this approach makes it appear that all reactors have the same likelihood of failure to SCRAM upon demand, this is an oversimplification. There are substantial uncertainties in these calculations, and experience indicates the potential of a wider range of probability from plant to plant than might be inferred by the estimation of uncertainties in probability studies. This could be due to variances in design and operational factors (e.g., maintenance procedures and QA) which are important to the reliability of the reactor protection system.

The staff is aware of SCRAM failure precursors which have occurred at a rate of about 1×10^{-4} per demand. This is reasonably consistent with the Salem event. However, the Salem event raises the concern that the median SCRAM failure probability may be higher than the value currently used in the generic ATWS rulemaking value impact analyses. In light of this event we are reassessing the ATWS rule proposals and technical bases.

The incident on February 22, 1983, was very unusual in that the operator manually scrammed the reactor within a few seconds of the automatic trip signal. A quick review of the incident by the Utility led them to the erroneous conclusion that the reactor has scrammed automatically. Thus, the plant was restarted on the premise that the reactor protection system was completely functional, and no repairs were made. After the February 26, 1983 incident, a close examination of the plant computer records from the February 22 event showed that the automatic SCRAM had not functioned. The staff does not count the two Salem events as separate instances involving failure to SCRAM upon demand, since the cause of both failures was the same problem and was not repaired after the first event. Therefore, the two events could not be counted separately.

BIDEN QUESTION 84 FOR COMMISSIONER GILINSKY: I noticed that after this incident you said that there were "some very serious things that happened here." I would assume by that statement that you meant to say that the failure of the safety devices presented a high degree of danger to the plant and to the public given their critical nature.

(a) Would you provide some elaboration to that statement?

The incidents at Salem were especially serious because they involved long neglect and, ultimately, failure of the reactor protection system -- the automatic shut down system. Nothing is more important in reactor safety than to shut down the reactor when it departs from normal operation. At the time I made this statement I had three items in mind.

There was insufficient -- in fact, hardly any -- maintenance performed on the vital reactor trip breakers since they were installed in December 1976.

About 30 different persons reviewed and approved work orders, purchase orders and material records on which the reactor trip breakers were misclassified as not being "safety related". Some of these oversights were in the course of quality assurance reviews, which are supposed to catch mistakes of this sort.

Several senior persons failed to notice the breaker failures on February 22nd in reviewing the computer event sequence before reactor restart on the 23rd. This occurred despite a close examination of the record to determine which signal actually tripped the reactor.

Since I made the statement you quote, I have learned that after single breaker failures on 20 August 1982 and 6 January 1983, at Unit 2, the reactor was restarted before completing the investigations of the breaker failure mechanisms and without examining the other reactor trip breakers on the unit.

These various items involving quite a number of persons in different parts of the organization indicate a breakdown in management attention to safety.

(b) Would you also detail your concerns about the plant personnel apparently being unable to recognize the occurrence of the event on the 22nd?

In allowing utilities to operate nuclear plants, we rely heavily upon careful review of plant conditions, prompt identification of potential problems, and also prompt corrective actions in order to assure safety.

I was concerned that a failure of the automatic scram -- the most vital safety feature in the plant -- should occur and not even be recognized. As mentioned above, at Salem several people who reviewed the computer record of the February 22 event did not notice the failure to scram. As a consequence, the plant was restarted in an unsafe condition only to suffer an almost identical event three days later.